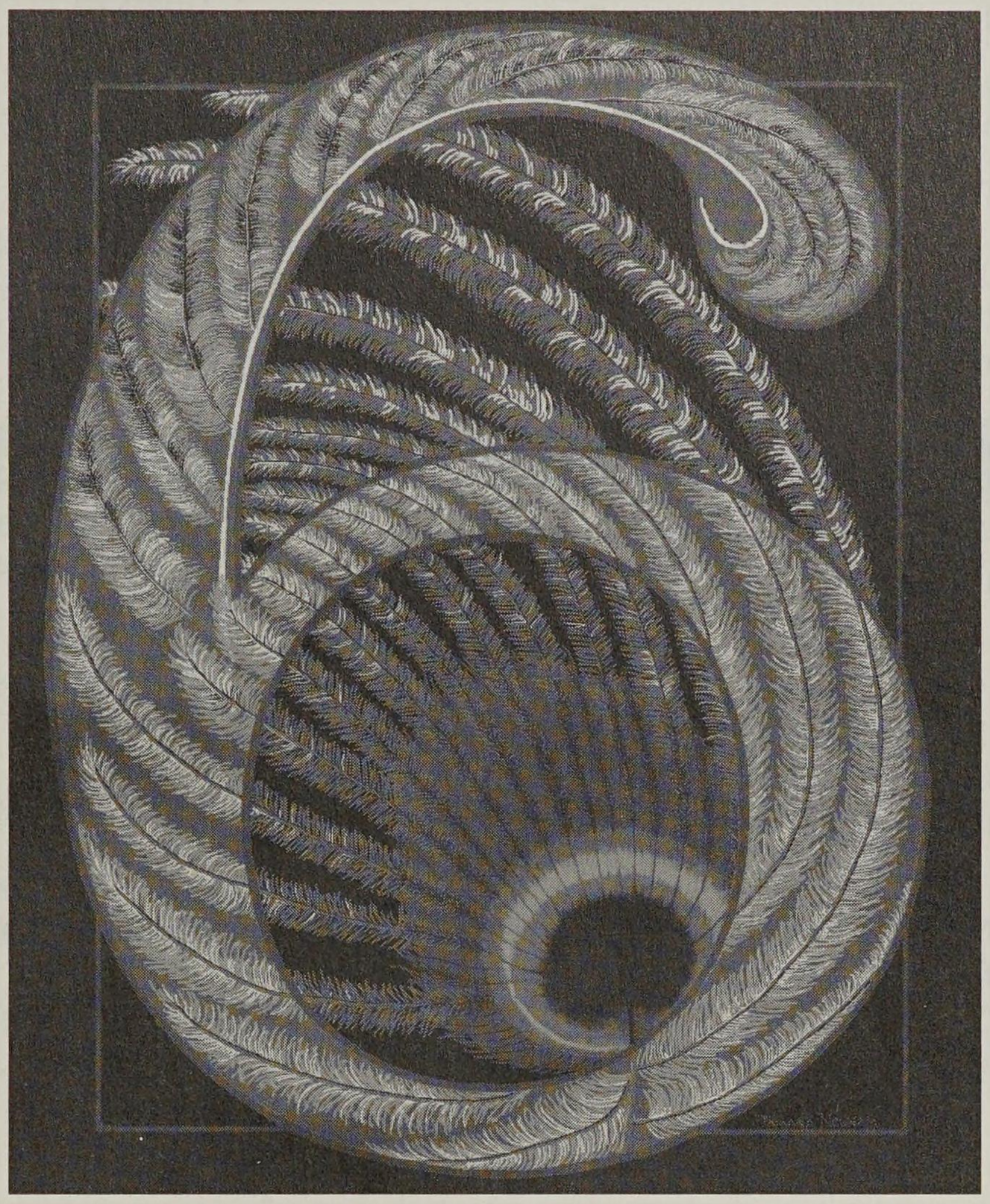
UNDERSTANDING DOS 6

Mary Campbell
David R. Campbell

Includes 3.5" Data Disk

UNDERSTANDING DOS 6



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Preface

Understanding DOS 6 is a user-friendly text designed to teach DOS fundamentals to first-time users in a clear, easy-to-understand manner. The book covers both DOS prompt entries and the DOS Shell in considerable detail. Much effort has been put into enhancing the "useability" of the book. Icons are utilized throughout to introduce recurring chapter features. Color bars at the bottom of each page distinguish instructional pages from end-of-chapter pages. No color bar indicates reference pages. Finally, the cover is spiral-bound to make it easy to use when space is limited; and it includes a Quick Reference flap which details ten of the most common DOS commands in context, and also doubles as a bookmark.

The book is crafted to provide both sound pedagogy and detailed reference for student and teachers alike.

PEDAGOGY

Each chapter begins with a set of skill-based **Objectives** on the chapter opening page and a brief **Overview** of chapter topics. This section is indicated by the Overview icon.

Individual topics are explored by way of our three-step approach (Presentation-Implementation-Experimentation) to learning software skills. This approach makes the text ideal for both instructor-led and self-paced courses. The instructional pages are the core of the book and are indicated by a green bar at the bottom of the page.

1. **Presentation** of concepts in a brief, clear manner. Analogy is used wherever possible to provide students with a context they can relate to. Lots of charts, illustrations and screen shots help reinforce the idea.
2. **Implementation** of concepts in explicit step-by-step *Guided Tutorials*. Here, students work on putting theory into practice in a non-threatening environment. Tutorials appear in green, shaded boxes throughout the text.
3. Student **experimentation** with concepts in the *On Your Own Exercises*. Here students get an opportunity to try out what they learned through controlled problems without explicit guidance.

At the end of each chapter students review the material covered through a number of receptive and productive activities. End-of-chapter pages are indicated by a gray bar at the bottom of the page to make this material easy to locate.

Vocabulary: Important terms presented in the chapter are reviewed here Detailed definitions are provided.

What You Learned: This section gives a brief summary of the skills learned in the chapter. Both this section and the *Vocabulary* section serve to reinforce the chapter concepts.

Review Questions: True/false, matching, fill-in and short answer questions test students' mastery of the basic concepts.

In the Lab: Lots of hands-on lab exercises allow students to practice what they learned right on the computer.

Thinking on Your Feet: Creative, real-life scenarios give students the opportunity to develop essential problem-solving skills in home, school, and workplace settings.

REFERENCE

The second part of the book is a detailed **Command Reference** covering the most used DOS commands. It includes syntax, descriptions of parameters and switches, as well as possible applications. Page references to commands covered in the text are provided as a link between the pedagogical and reference portions of the book.

The pedagogical portion of the text (the part with the green bars at the bottom of each page) includes several reference features as well.

Command Syntax Section: This section breaks down the syntax of each command in a schematic diagram and explains each part.

Generic Keystrokes: These are set off in green type and provide easy reference for using DOS commands in a simple, step-by-step format.

In addition, there is a **Quick Reference** included on the back cover flap which also serves as a placeholder or bookmark for the text.

DISK AT THE BACK OF THE BOOK

The disk provided at the back of the book contains files to be used by students in completing the chapter exercises and many of the examples. The student should also have two blank disks. These blank disks will be used for copying selected information and for storing the students' own files. These disks also introduce students to the concept of removable disks and to always ensure that they have the correct disk in the drive.

The files for exercises are stored in the root directory of the Student disk and should be copied to another disk labeled Student disk before proceeding. The original disk also contains files for duplicating tutorial exercises.

The procedure to be used for creating the working copy of the Student disk and Work disk is as follows:

1. Label your blank disks as follows:

   Student disk—Disk 1
   Work disk—Disk 2

   DO NOT FORMAT THE ORIGINAL DISK PROVIDED WITH YOUR BOOK!

2. Insert the blank disk that you labeled Student disk in drive A, and then type **FORMAT A:**. Press Enter↵ twice, and wait for the format to

complete. Depending on the release of DOS that you are using, you may be prompted to add a label. Press Enter↵ to omit a label.

3. Type **Y** to format another disk and then remove the Student disk.

4. Insert the blank disk that you labeled Work disk in drive A. Press Enter↵ to begin formatting.

5. When the formatting is completed, press Enter↵ to omit a label, type **N**, and then remove the Work disk.

6. Insert the disk from the back of your book in drive A, and have the disk that you formatted and labeled Student disk available to insert into the drive when prompted to insert the target disk.

7. Type **DISKCOPY A: B:** and then press Enter↵.

   You can use this entry even if you have only one drive since DOS will refer to drive A and either A or B. If you have two drives, but want to use only one for the copies, you will need to type **DISKCOPY A: A:** to complete the copy.

   The Work disk is blank and ready to use to store your own files as well as the files created in the chapter exercises.

ACKNOWLEDGMENTS

Although we are listed as the authors for this book, many others have contributed greatly to the final product. So much of the credit for the features in this book belong with the reviewers and the editors at Prentice Hall Career & Technology.

A number of faculty members gave generously of their time to review this manuscript. Their comments and contributions were invaluable in shaping the final product. We appreciate the time they took from their busy schedules to review it and thank them, particularly for sharing the needs of their students with us. Their comments led to our rewriting many sections of the text to make it useable for both instructor-led and self-paced curriculums. We would like to extend our special thanks to each of them:

Dr. Donna Matherly, Tallahassee Community College
Lo-An Tabar-Gaul, Mesa Community College
Judy Scholl

The editors at Prentice Hall Career & Technology were also an immense help. As always, Ted Werthman, acquisition editor, had many great ideas for improving the text and was always available to discuss ideas. Debbie Brennan, project manager, had unbelievably good ideas and wonderful, creative implementations for them. Although we have written many books, we have never before had the opportunity to work with someone with Debbie's level of commitment to a book project. It was truly a wonderful experience to work with her on this, and we both feel that we learned many new ways of improving future book projects from her.

Thanks also go to V. Gene Myers, the illustrator who provided all of the marvelous cartoons throughout the text, and to maranGraphics for their clear, accurate technical illustrations. Their efforts are much appreciated, and they both added tremendously to the final product.

CHAPTER 1

HARDWARE AND SOFTWARE BASICS

After completing this chapter, you will be able to:

- Identify the components of a typical PC.
- Recognize various hardware configurations.
- Explain the role that software plays in a PC environment.
- Discuss the different functions of an operating system.

OVERVIEW

A computer is a collection of electronic components designed to do things for you. At first you may wonder how much it will help you when there seems to be so many new things to learn. You may feel like it is more trouble than it is worth to learn to use it. A little patience and practice will help you overcome these initial feelings and you will soon find all sorts of chores for the computer to help you with.

Any task that is repetitive is ideal for the computer. You might want to prepare a memo, a budget request, or a travel expense form. Because you can define what needs to be done to complete the first task and use this definition for other times, you will need to do much less work on subsequent tasks. The computer is also the ideal helper any time you have a task that requires computations. The computer never makes mistakes—whether it is performing addition, subtraction, multiplication, or division. Once you define a calculation, the computer can recompute it easily if any of your data changes. A third place where the computer makes a great helper is with tasks where you need to store large amounts of data. Maintaining information on clients, invoices, or orders are all tasks where you are utilizing the computer's capabilities. Not only does the computer store your data, but it provides easy access to any part of it that you need.

There are many types of computers; but regardless of which model you choose, it will consist of the same basic set of components known as hardware. Hardware is all the physical equipment that you can touch. Each piece of equipment will perform a specific function such as reading or writing data, printing, or displaying information for easy reading. The computer system referred to in this book is called a personal computer or PC because it is designed to do the work of one person at a time. Other types of computers include mainframes and minicomputers. They are much larger and do the work of many people at once. Computers smaller than the PC normally have very specialized tasks such as the calculator that you might use to balance your checkbook or the hand-held electronic games that play one game at a time.

Many different types of PCs are available. Although they may look somewhat different, each is built with the same type of components that perform the same functions. Buying a PC is like buying a car. You can buy the "bare-bones" model that contains only the necessary parts, or you can buy a more sophisticated "luxury" model by adding other components to give your PC more capabilities.

When you buy a PC you will need to buy more than just the hardware. A PC needs software in order to operate. Software is the instructions that direct the computer in performing its tasks. Some software is very basic and might, for example, allow you to display a

clock on your screen. Other software is quite sophisticated and could turn your computer into an accounting system capable of keeping a large company's financial records in order. You will need to decide what type of software you need to accomplish your specific tasks. Whatever software you choose will require you to load operating system software in your computer first. DOS stands for Disk Operating System. It is the most popular operating system software for PCs today. It is the main topic in this book and it is needed to do anything with your computer.

PC COMPONENTS

A basic PC consists of three major components: a monitor which displays information, a keyboard for entering information into the computer, and a system unit which is the brains of the computer and does all the processing of information. Figure 1-1 shows the three components. There are many useful devices that you can add to the basic PC. Some of the options are:

- a **mouse** to make selections without typing;
- a **disk drive** to store and access large amounts of data;
- a **modem** for transferring the computer's data over the telephone line;
- a **printer** to produce printed copies of information in the computer.

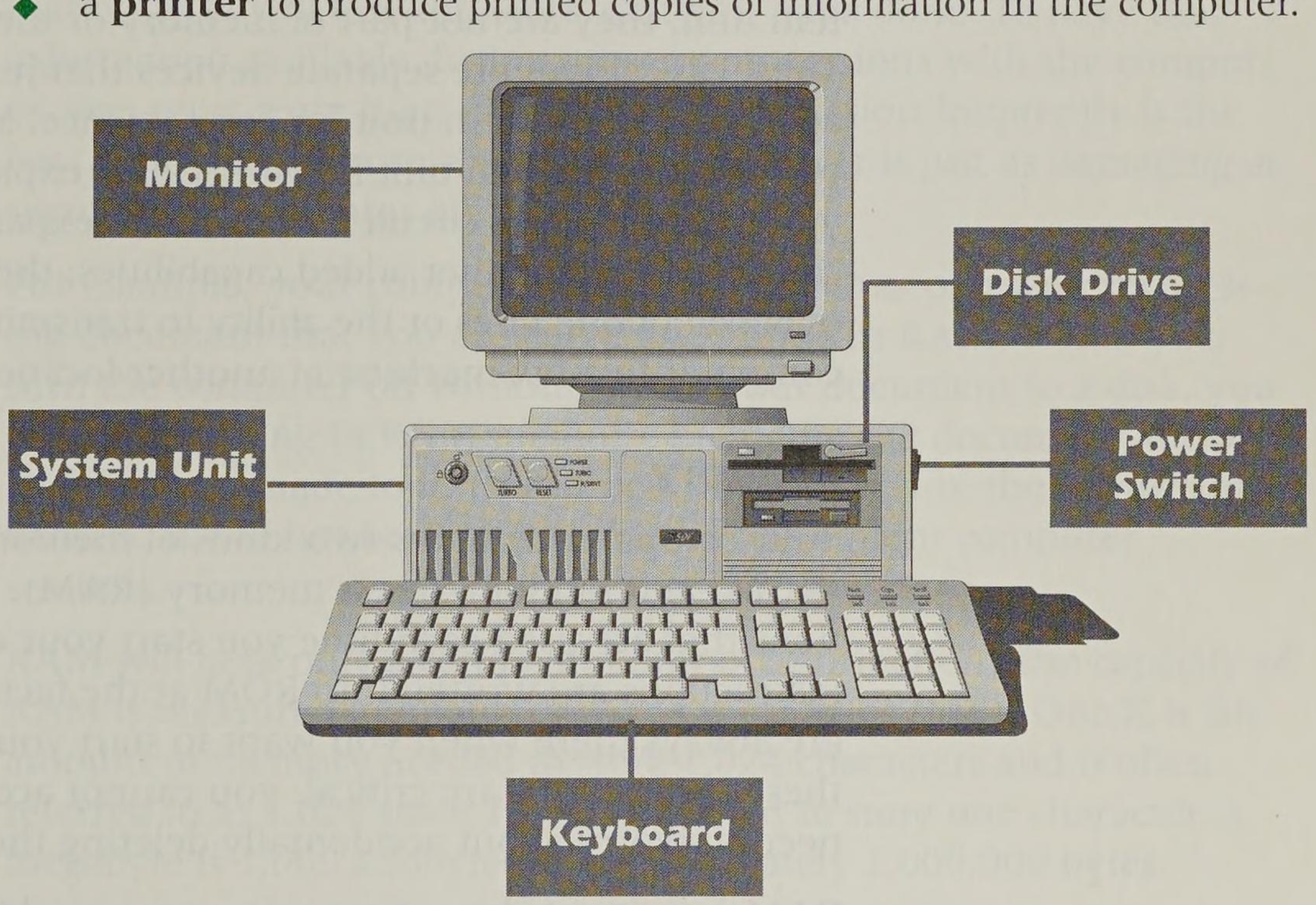


Figure 1-1
Components of a personal computer

This basic configuration is the same whether you have an IBM-PC or an IBM-clone (a computer modeled after the IBM-PC). Your PC may sit on your desktop, rest in your lap, or fit in your shirt pocket. The components may have slightly different sizes and shapes depending on the model, but they are all designed to do the same basic things.

IBM-clones are computer systems designed to be compatible with IBM-PCs, but are manufactured by a company other than IBM. While there are varying degrees of compatibility, a system which is 100 percent IBM-compatible can execute any program written for the IBM-PC with no differences.

SYSTEM UNIT COMPONENTS

The system unit consists of memory and a central processing unit (CPU). Just as you use your memory for the important names, dates, and places you will want to recall, the computer's memory is the place where it stores data that it needs to access quickly. The computer's processing unit is its brain. The processing unit manages the flow of data within the computer. Since memory and the processing unit are the same basic components found in a calculator, the system unit can be thought of as a sophisticated calculator. You never interface directly with the system unit, but use the keyboard and monitor for much of your communication with the computer. It is still a good idea, though, to understand the basic components and the functions they perform within your computer system.

Memory and the CPU are chips located on the computer's motherboard, the main circuit board inside your computer. Although you may have disk drives built into the same box that houses your system unit, they are not part of memory or the central processor. These disk drives are separate devices that just happen to be packaged with the system unit for convenience. You can often find places in the system unit housing called expansion slots that allow you to add smaller circuit boards called expansion cards. These cards can give the computer added capabilities: the ability to send data over the phone lines or the ability to transmit a memo stored in the computer to a fax machine at another location.

Memory

Your computer contains two kinds of memory: read-only memory (ROM) and random-access memory (RAM). ROM contains instructions that are used each time you start your computer. These instructions are written into ROM at the factory to insure that they are always there when you want to start your computer. Because these instructions are critical, you cannot access them so you do not need to worry about accidentally deleting them.

RAM consists of chips that perform a special function and are called memory chips, as shown in Figure 1-2. These chips store information while you are working on the computer. RAM can be used to store many kinds of information. When you first start your computer, information is placed in RAM to get your system working. Later

when you want to type a letter or prepare a budget, other information may be put in memory. This information might be, for example, a word processing program and the data you want to type. Basically, the two types of things that are placed in memory are the instructions that tell the computer what to do (software programs) and the data that you enter. The amount of RAM needed by a program is typically specified on the back of the box that the program is packaged in as well as in the manual that comes with the software. As you type your letter or budget, the size of your document determines how much RAM memory it uses.

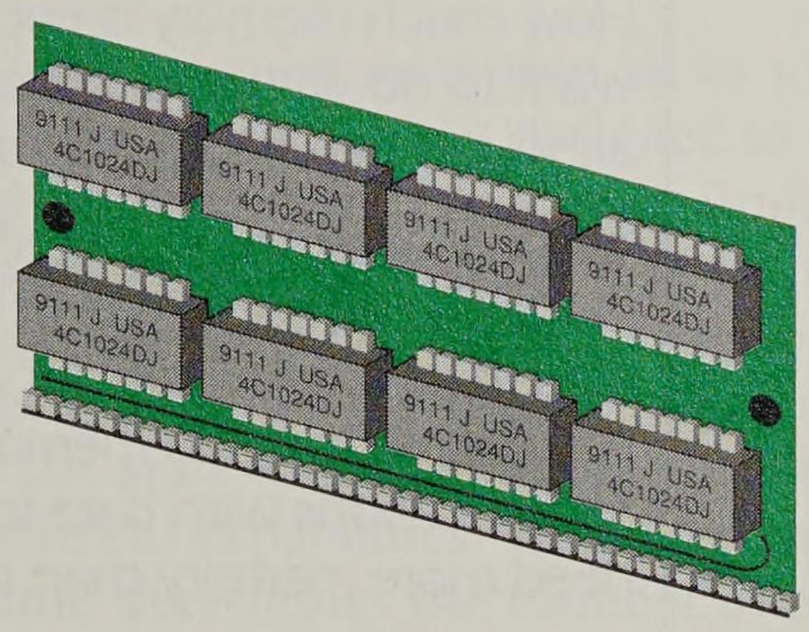


Figure 1-2
Memory chips

Unlike ROM, the information placed in RAM is only stored there temporarily. If you turn your computer off without saving the information, you will lose the work that you have done. To have that information available during subsequent sessions with the computer, you must store it on disk. Saving information frequently is the best approach because a sudden loss of power is just as damaging as turning the computer off yourself.

For example, your computer stores the contents of a word processing document that you are currently editing in RAM. When you turn the computer off without saving your document to a disk, you erase everything in RAM memory, including the document and any changes you made to it. Unless you saved a copy of the document on disk, it will not be available during subsequent computer sessions.

RAM will hold only a certain amount of information. The capacity of RAM is measured in kilobytes (K) or megabytes (MB). One K is the amount of memory needed to store 1,024 characters and is often referred to as 1,024 since 1 byte is needed to store one character. a megabyte is 1,000 kilobytes or approximately 1,000,000 bytes.

For more information on memory see the box "The Inside Scoop on Memory."

THE INSIDE SCOOP ON MEMORY

To confuse matters further, there are four different categories of RAM memory: conventional, upper, extended, and expanded. Conventional memory is the first 640K of RAM. Upper memory is the 384K above conventional. The total of conventional and upper memory is 1MB. Extended memory is the memory above 1MB in computers built with a 286, 386, or 486 CPU chip. Expanded memory is the extra memory that you can install in the older model 8088 and 8086 PCs.

How much memory is enough? The answer depends on what you want to do with your computer. DOS 6.0 itself uses over 120K, although part of this can be upper memory.

Applications such as Lotus® 1-2-3® Release 2.4 and dBASE IV® require 512K and 540K of conventional memory respectively. dBASE actually requires a total of 2MB of RAM. On top of this, you will need some room in memory for your data. If you want to run several applications with data for each in memory at the same time, you need more memory than if you run one application at a time.

When you are buy a new system, you probably want to acquire a minimum of 4MB of memory. This is a good minimum because memory has become cheaper, and programs are requiring more memory to run properly. If you have a system that only has 640K of memory, you still do not need to rush out and buy more. You are probably using applications designed to run on that much memory. Unless you find that you need to run your programs faster, or you want to use a program that requires more memory, you can get by on what you have without the expense and bother of an upgrade to greater memory.

Central Processing Unit

The central processing unit (CPU) is a chip contained within your system unit. It is the "brain power" of the computer. The CPU interprets and processes information, including information that you type using the keyboard and information presented by programs in memory. All arithmetic and logic operations are performed by the CPU. These operations might include adding two numbers together or determining if one value is larger than another.

The CPU is the main chip in your computer. Computers are classified by the speed and type of chip their CPU contains. Older model PCs have 8086 or 8088 CPUs. Later models use the Intel 80286, 80386, and 80486 chips that are frequently referred to as 286, 386, and 486. Higher numbers always indicate a more advanced and usually faster

microprocessor. Some software programs are designed to run only on 80286, 80386, and 80486 models, since earlier PCs are too slow to provide adequate performance for the particular program.

Another method of classifying chips, clock speed, is measured in megahertz. A 25 megahertz CPU operates 1.5 times faster than a 10 megahertz model. Lower level chips cannot run as quickly as the higher level chips. For example, a 8088 cannot run at 25 megahertz, although the 286, 386, and 486 chips all have 25 megahertz models.

MONITORS

The monitor is the system component that looks something like a television screen. Often the monitor is designed to sit on top of the system unit, though some system units can fit under a desk, while the monitor sits on your desktop. The monitor is used to display information or instructions that you send to the computer or that the computer sends to you. The monitor is connected to a video card located inside the system unit. There are different kinds of video cards with different capabilities. The video card, in combination with the monitor, determines the number of colors that can be displayed and the screen resolution. Monitor quality, or resolution, is measured by the number of pixels or dots per inch on the monitor screen. Monitors with a higher number of dots per square inch provide sharper images that are easier on your eyes.

Color or Monochrome

A monitor is monochrome if it can display only one color, even if it displays many shades of that color. This one color is usually white, amber, or green. If you want to display a variety of colors you must have a color monitor.

Graphics or Text Display

Some monitors can display only text characters, such as the characters you type from the keyboard. However, most newer monitors have graphic capability, allowing them to display other images and shapes on the screen. You need the proper type of video graphics card to be able to display graphics on your monitor. The most popular video cards in recent years have been the Enhanced Graphics Adapter (EGA), Virtual Graphics Adapter (VGA), and Super Virtual Graphics Adapter (SVGA). Although all three types display graphics images, the EGA images are much less detailed than the SVGA images.

KEYBOARDS

The keyboard is the device you use to enter your commands to the computer. The keyboard consists of keys that match those you find on any standard typewriter, and some other keys specific to computers. These advanced keys include function keys, labeled F1 through F10 or F12, that send instructions according to the software you are using.

There are two styles of keyboards: standard and enhanced, as shown in Figures 1-3A and 1-3B. The standard keyboard contains 84 keys with the function keys located in two columns at the left side. The numeric keypad and the arrow keys use the same actual keys on the keyboard. When the NumLock key is pressed on, you can enter numbers with the numeric keypad. When NumLock is off, the numeric keypad responds as arrow keys, so pressing the same keys moves your cursor. You can see both sets of purposes marked on these keys. The NumLock key toggles between the on and off setting each time it is pressed.

Figure 1-3A
The standard keyboard

The enhanced keyboard contains 101 keys with the function keys located in the first row across the top. A second set of arrows keys is provided to allow directional movement when NumLock is on. In this keyboard layout, there are two locations for the Alt, Ctrl, Enter↵, Del, and Ins keys.

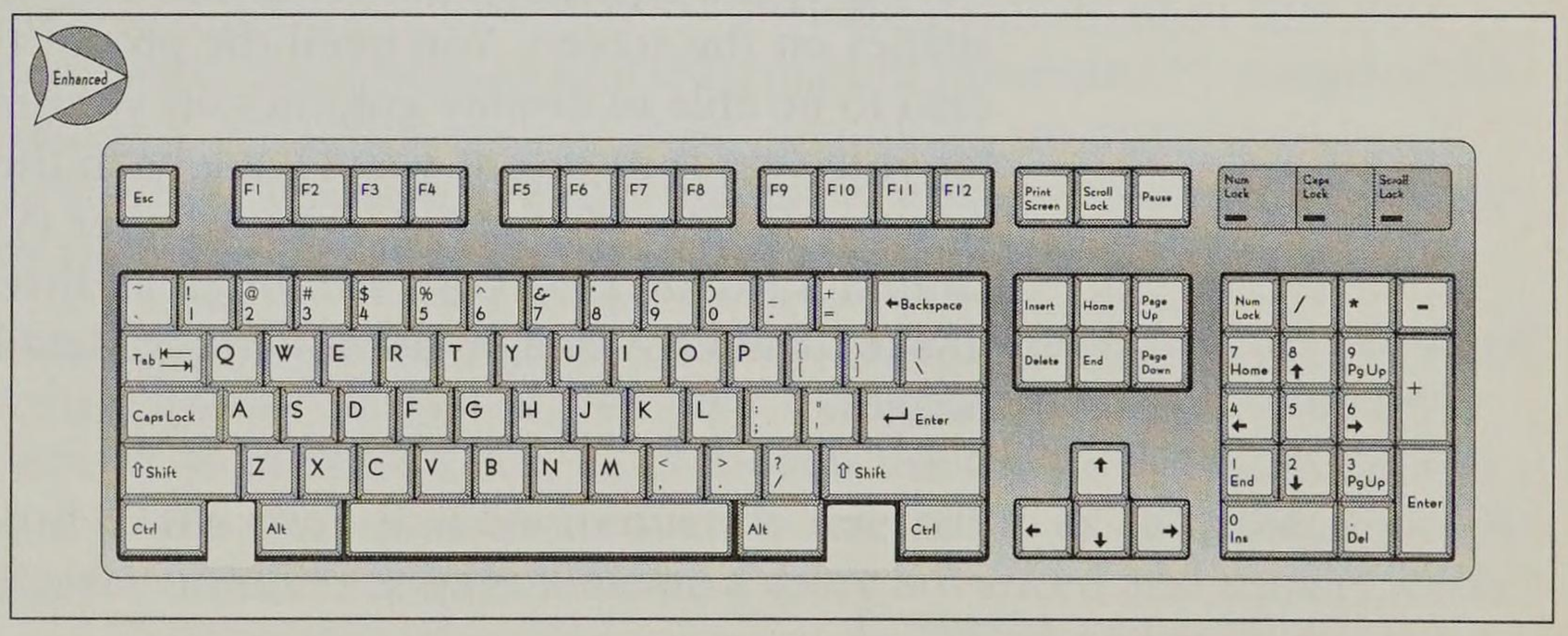


Figure 1-3B
The enhanced keyboard

PRINTERS

If you want to print information from your computer, the computer must be connected to a printer by way of a cable. The cable is attached to a *port* or special connector located in the back of the computer's system unit. You can attach the cable to a serial port (a single line which transmits characters from the port to the printer) or a parallel port (parallel lines which transmit many characters at once from the port to the printer) depending on your printer.

Many types of printers are available. One common type is a dot matrix printer, which uses a printer ribbon as its ink source, much like a reel-to-reel typewriter. Dot matrix printers provide draft-quality printing which shows the pattern of dots that make up each character. Sometimes they can also provide letter-quality printing which provides clear, crisp letters similar to what you would get on an IBM Selectric® typewriter. A more sophisticated printer is a laser printer, which always provides high-quality printing, using ink stored in a toner cartridge similar to those used in copy machines. Some printers print only black, and some print both black and color. Other printers can use many different fonts or typefaces which consist of a set of characters in a specific style. Figure 1-4 shows a dot matrix printer and a laser printer.

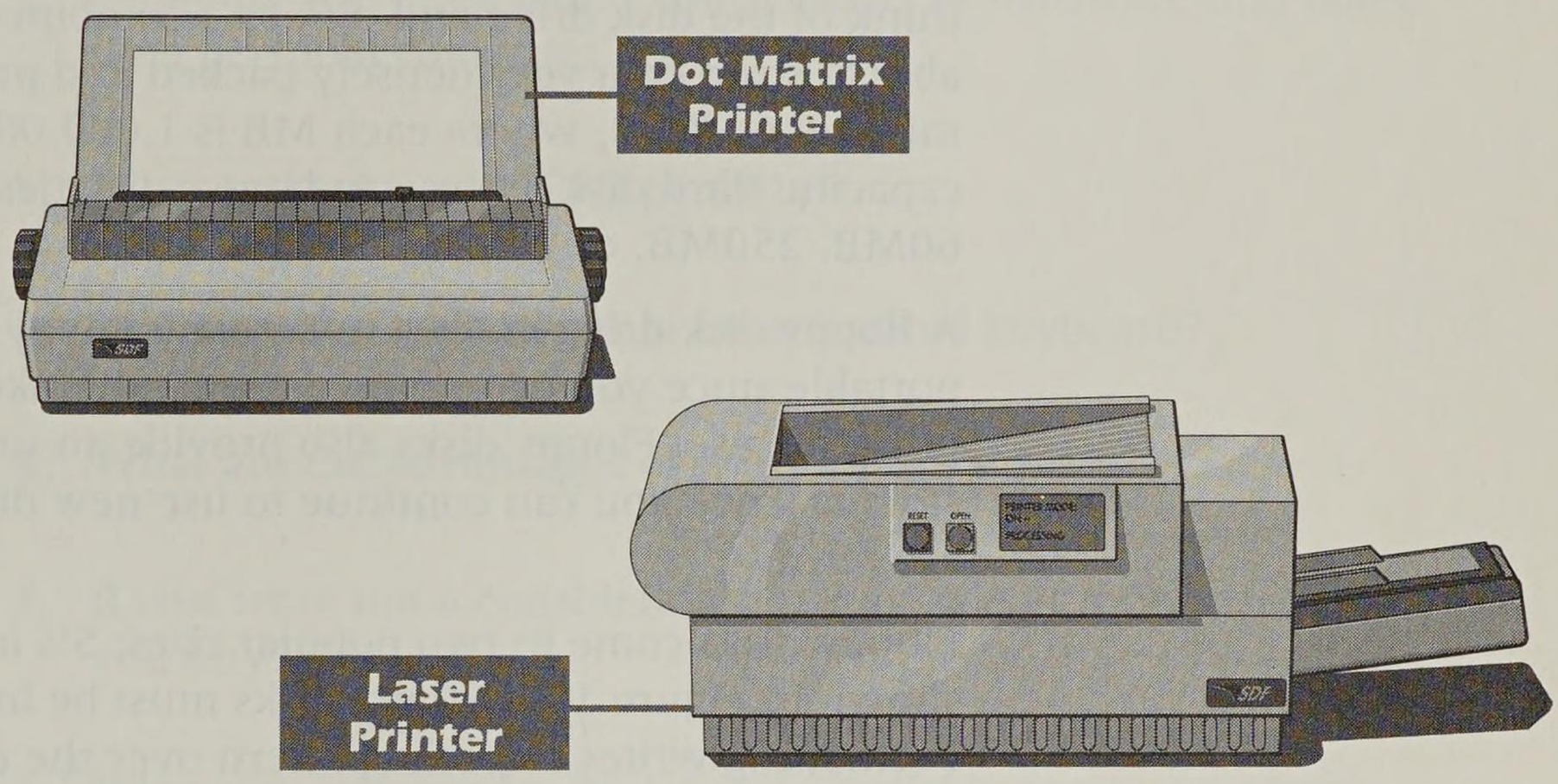


Figure 1-4 Different types of printers

DISK DRIVES

Disk drives are devices for storing information. A disk drive is somewhat like a cassette recorder. By itself, a cassette recorder does not play or record music without a cassette tape in it. In the same way, your disk drive cannot read or write information without a disk in it. You will always need both a disk drive and a disk to store data.

Some disk drives are built into the system unit, and others are external, sitting next to it or on top of it. Each disk drive uses a specific

size of disk, and has the capacity to store a certain amount of data on that type of disk. Figure 1-5 shows three different disk drives.

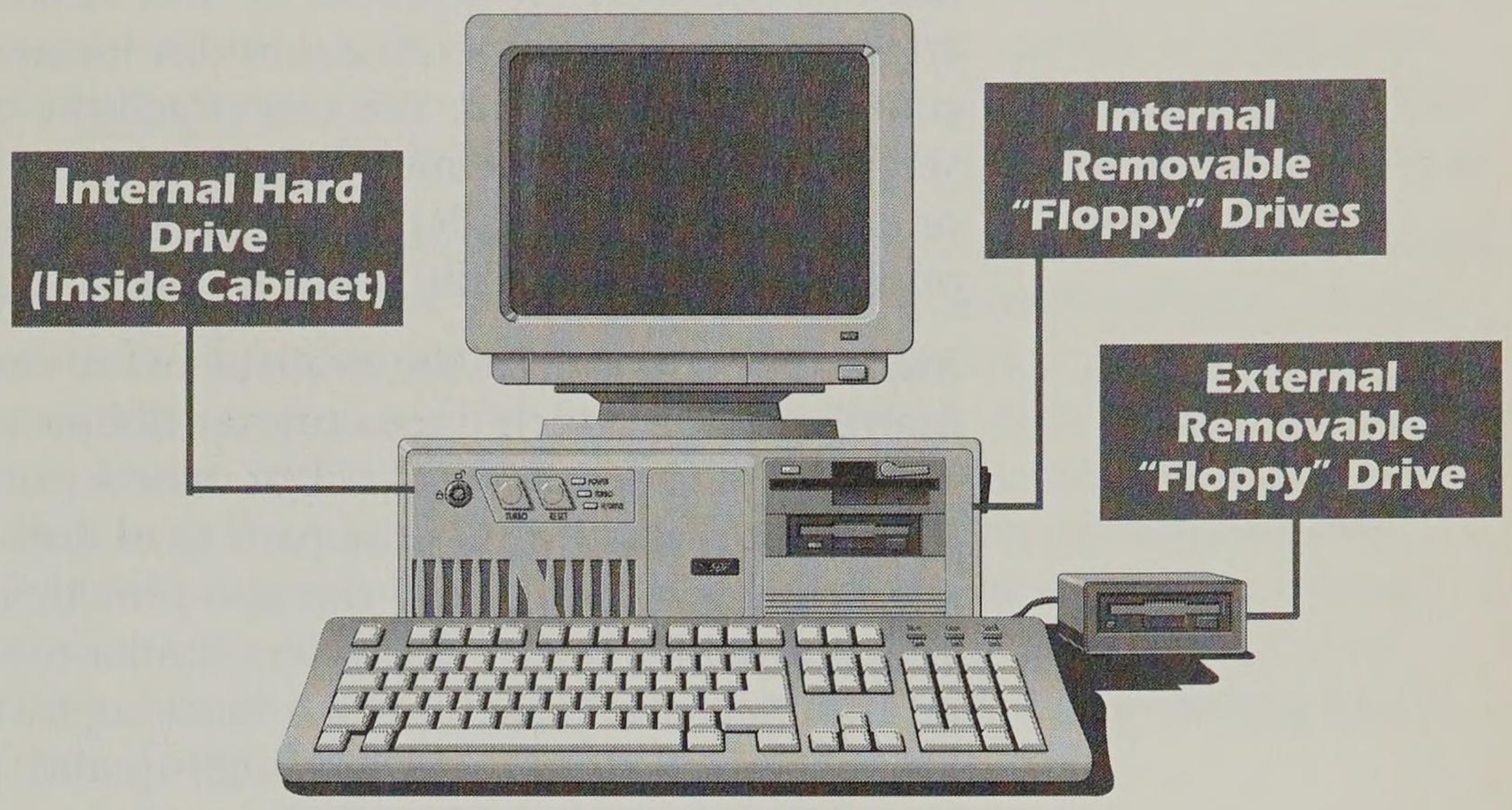


Figure 1-5
A system with three different drives

There are two basic types of disk drives: hard (or fixed) and floppy. A hard disk drive has a disk that is always in the drive and cannot be removed from the computer. A hard disk is usually located in the system unit. Since a hard disk is fixed in one place, you will tend to think of the disk drive and disk as a combined unit. Hard disks are able to store data very densely packed and provide capacities in megabytes (MB), where each MB is 1,000,000 characters of storage capacity. Hard disk drives can have capacities of 20MB, 40MB, 60MB, 250MB, or greater.

A floppy disk drive reads a removable floppy disk. Floppy disks are portable since you can remove them and take them to another computer for use. Floppy disks also provide an unlimited amount of data storage since you can continue to use new disks as the existing disks are filled.

Floppy disks come in two popular sizes: 5¼ inch and 3½ inch, as shown in Figure 1-6. Floppy disks must be formatted before use. Formatting writes a special pattern over the disk surface to prepare the disk to hold a certain amount of data. Popular formats are described as double density or high density. The 5¼-inch disk can contain up to 360K or 1.2MB depending on whether the disk drive is low density (double-side/double-density disk) or high density (double-sided/high-density disk). The 3½-inch disk can contain up to 720K (double-side/double-density disk) or 1.44MB (double-sided/high-density disk). To use the high-density format, you need both a high-density drive and a disk certified to be able to contain this higher capacity.

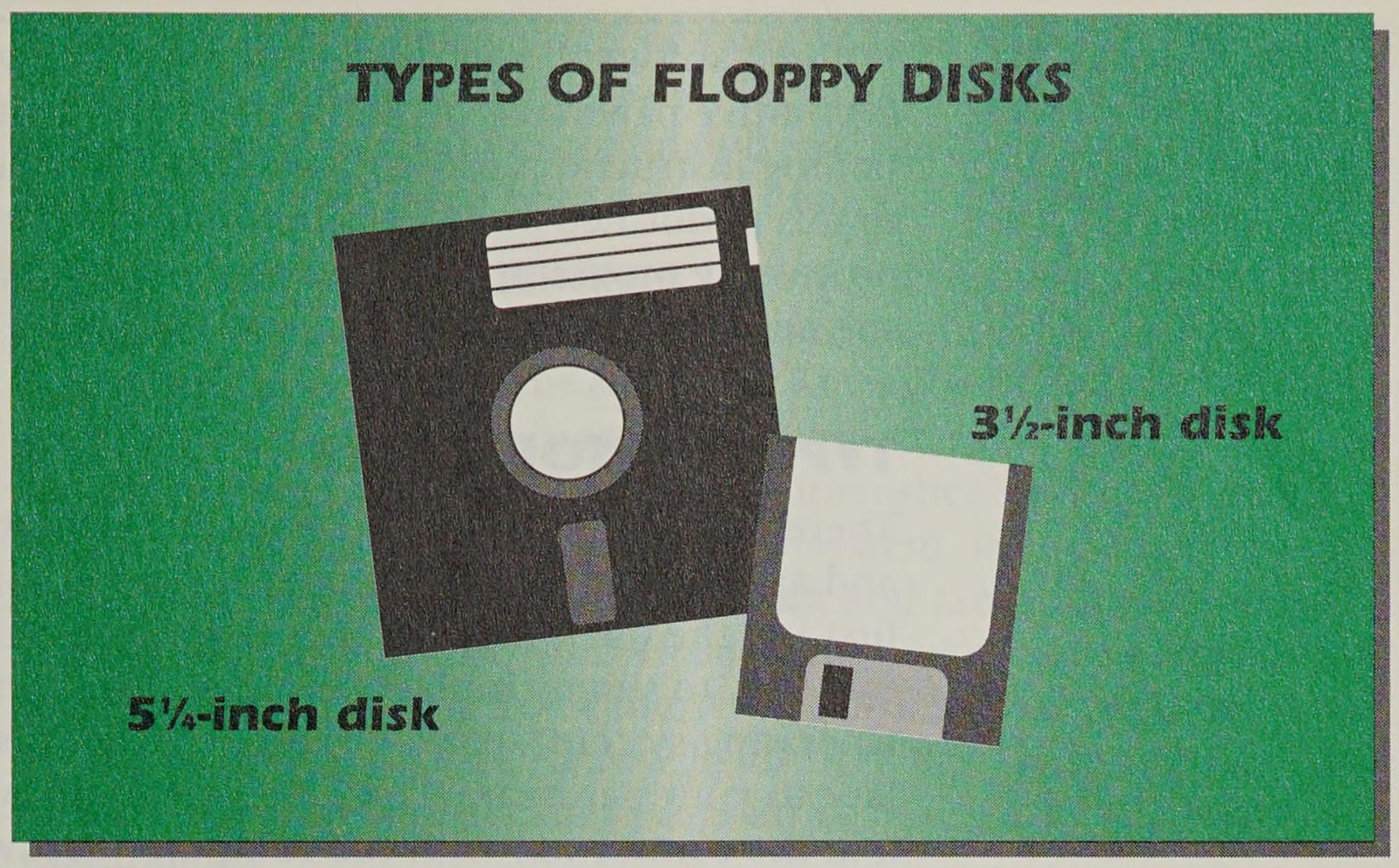


Figure 1-6
5¼-inch and 3½-inch disks

ON YOUR OWN EXERCISES

1. What are the three major components of hardware that make up a personal computer?

2. What tasks does the CPU perform?

3. What are the advantages of an enhanced keyboard?

4. What are the advantages of using a laser printer?

5. If cost were not a consideration, what type of monitor would you buy?

6. What types of storage devices are available for storing data?

7. What is the difference between a high-density and a double-density floppy disk?

SOFTWARE

Without software, your computer is just an overly large and strangely decorative paperweight. Software is the computer programs containing instructions for various tasks. Software provides the activity that is performed on your computer, whether you are using a word processing program, playing a game, or working with figures on a spreadsheet application.

TYPES OF SOFTWARE

There are two main types of software: operating system software and application software. During a typical computer session, you first use the operating system software, such as DOS (Disk Operating System), to supply initial operating instructions to the computer. Operating system software is essential because it provides an interface to your hardware. Once the operating system has been loaded and the connection with the computer hardware established, you can use application software to perform other tasks. Application software is designed to make your computer perform special tasks such as calculations, word processing for producing letters and memos, or drawing capabilities to produce logos or other art. Without the initial operating system files, you cannot perform these tasks or any other ones on your computer.

Operating System Software

Operating system software is essential to anything you want to do with your computer. It has many functions, but its most important one is its role as a traffic cop for your system. Like a traffic cop during downtown rush hour, sharing the road with traffic that is backed up in all directions, the operating system directs the flow of information through the system.The operating system plays its traffic cop role by allowing tasks small amounts of time to use the printer, monitor, keyboard input, and disk drives before giving a share of time to another resource. The main features provided by operating system software are:

- starting your computer system;
- managing hardware components to allow all resources to be used efficiently;
- providing tools that enable you to better manage your data.

The most popular operating system for IBM PCs and IBM clones is DOS. Other operating systems are UNIX® and OS/2®. Their use is less widespread, and they will not be covered in this text.

There have been numerous versions of DOS since it was first released. The latest version, DOS 6.0, provides many features,

including better memory management and the ability to utilize a menu display to use DOS features. There have been some additional features added to improve commands such as the ability to undelete files accidentally erased from your system.

DOS programs perform functions such as executing a self-test on the computer memory to be certain there are no memory problems before you start to use your computer for tasks. DOS automatically executes this self-test every time you start your computer. It lets you set the current date and time and perform other startup functions that you may have customized in your system. If you have a hard drive, DOS files reside on your hard disk and are loaded automatically as soon as you turn on the computer. If you have a floppy disk only system, you must insert the system disk into drive A and turn on the computer. This procedure loads DOS into the computer. Then you are ready to load another program or to use the DOS features themselves.

In addition to the essential startup and control functions that DOS performs, it also offers tools to enable you to manage the information stored on your computer more efficiently. These tools consist of a series of programs stored on your hard disk with other DOS files. You can execute each program by typing a specific DOS command. You can use DOS commands to prepare a disk for storage, to copy a file, to remove unneeded files from your disk, and much more.

APPLICATION SOFTWARE

Application software is used to perform a specific task or set of tasks. A few examples are *word processors* that allow you to type and format letters or reports, *spreadsheets* that can compute budget projections, and *databases* that store large amounts of data for easy access and retrieval, just to name a few.

ON YOUR OWN EXERCISES

1. What is the purpose of operating system software?

2. What are some of the features that DOS 6 offers?

3. What is the difference between the operating system and application software?

VOCABULARY

Application software
Software which enables the computer to handle specific tasks such as word processing for memos and letters or spreadsheets for making budget projections.

Byte
The amount of storage needed to contain one character. A kilobyte (K) contains 1,024 characters, and a megabyte (MB) contains 1,048,576 characters.

Central processing unit (CPU)
The main component of the computer that supplies the majority of the "brain power" for processing information.

Clone
A computer modeled after an IBM-PC. Although its appearance might not be the same, it provides the same capabilities as an IBM-PC.

Disk
A storage device that is either a non-removable hard disk located inside the computer or a removable floppy disk. Hard disks are designed to store a large volume of data on one device. Floppy disks come in two sizes, 5¼ inch and 3½ inch, and are formatted for high-density or low-density storage.

Disk drive
A hardware component that allows you to read data from disks and write data to them.

Expansion cards
Small circuits boards inserted in slots to extend the capabilities of the motherboard. You can add cards to include the ability to send faxes with a personal computer.

Expansion slots
Areas where cards containing additional capabilities can be added to extend the capabilities of the motherboard.

Hardware
The components that make up a computer system, for example, the monitor, system unit, keyboard, and printer.

Memory
Temporary storage capability on the motherboard of the PC.

Motherboard
The main board in the PC. This board contains memory and microprocessor chips.

Operating system software
A set of instructions to tell the computer how to startup, manage hardware components, and better manage data.

Port
External connector at the back of the system unit for attaching devices such as printers using a cable to make the connection. The type of cable that you use depends on the port that you are connecting to.

Random access memory (RAM)
The memory that the computer uses to store information during a computer session.

Read-only memory (ROM)
The memory that contains instructions used in starting your computer.

Software
A set of instructions to tell the computer what to do.

Video card
Expansion cards that provide the ability to support a monitor's features.

WHAT YOU LEARNED

In this chapter you learned some basic information about your computer hardware and software. Some of the specific topics covered were:

- The various components of a PC.
- Different hardware configuration options.
- How memory is used by a PC.
- What software programs offer.
- What the operating system software does for you.

REVIEW QUESTIONS

Answer each of the following with *true* or *false*.

_____ **1.** RAM and ROM are different types of hard disk drives.

_____ **2.** A hard disk has a larger capacity than a floppy disk.

_____ **3.** Generally speaking, 3½-inch disks hold more data than 5¼-inch disks.

_____ **4.** The central processing unit provides the brain power of your system.

_____ **5.** Laser printers produce higher quality output than dot matrix printers.

_____ **6.** Dot matrix printers use a toner cartridge that is similar to the toner cartridge used in a copy machine.

_____ **7.** One function of an operating system is to manage the various hardware components.

_____ **8.** DOS stands for Digital Operating System.

_____ **9.** Memory is typically measured in K or MB.

IN THE LAB

1. List some popular software programs.

2. Visit a computer store, and describe some of the system configurations that you saw on display. List the price ranges for the system options that you looked at.

3. Read a few articles in a computer magazine, and report on some of the latest trends in hardware and software.

THINKING ON YOUR FEET

You have been asked to give a presentation on computer basics to the management team for your company. The demands of your other responsibilities cause you to delegate the preparation of slides showing computer components to a co-worker. As you look at the computer components in Figures 1-7 and 1-8 you notice that many hardware components have been mislabeled. Note the changes that you want your co-worker to make before using them in your presentation.

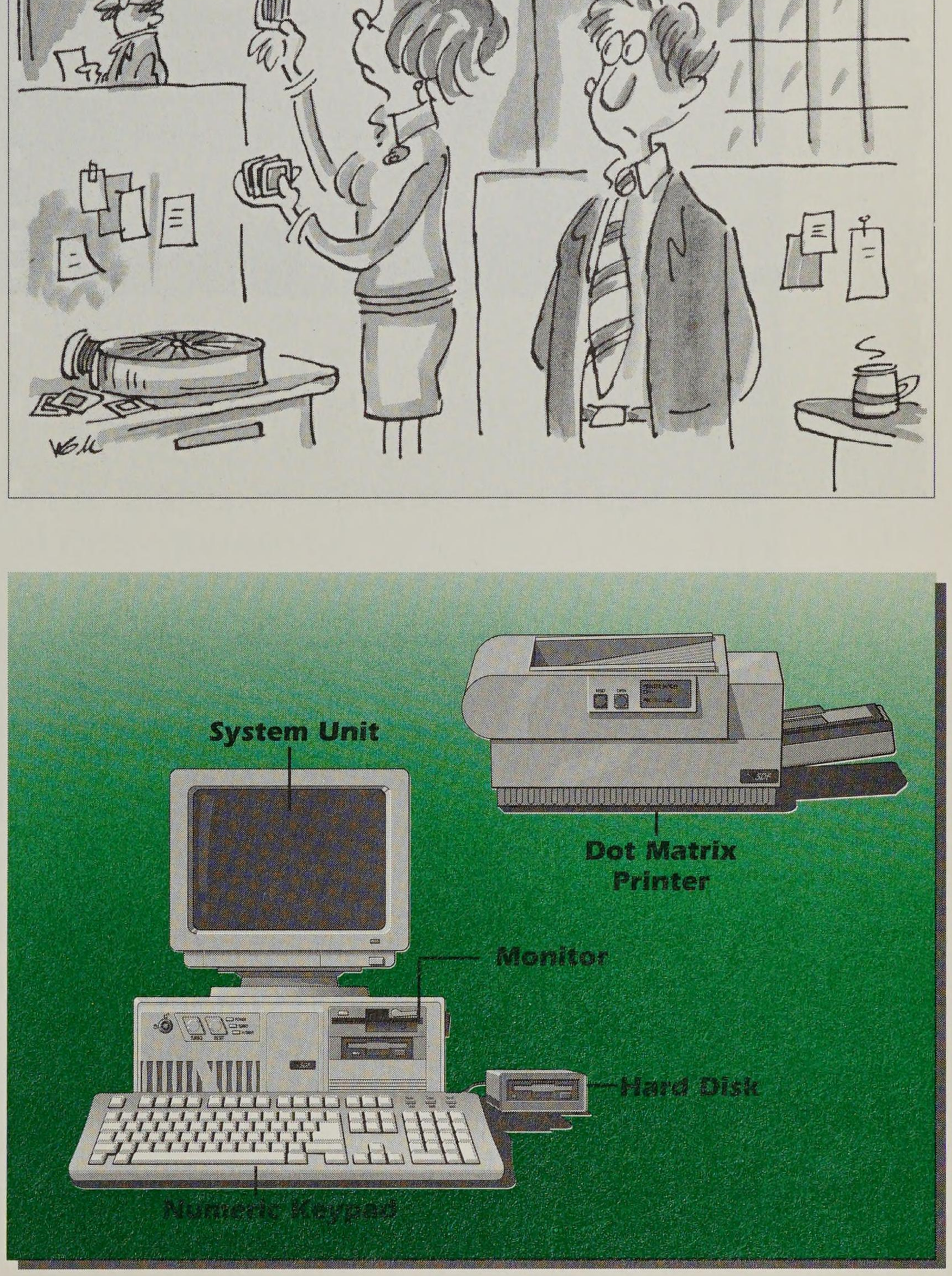


Figure 1-7

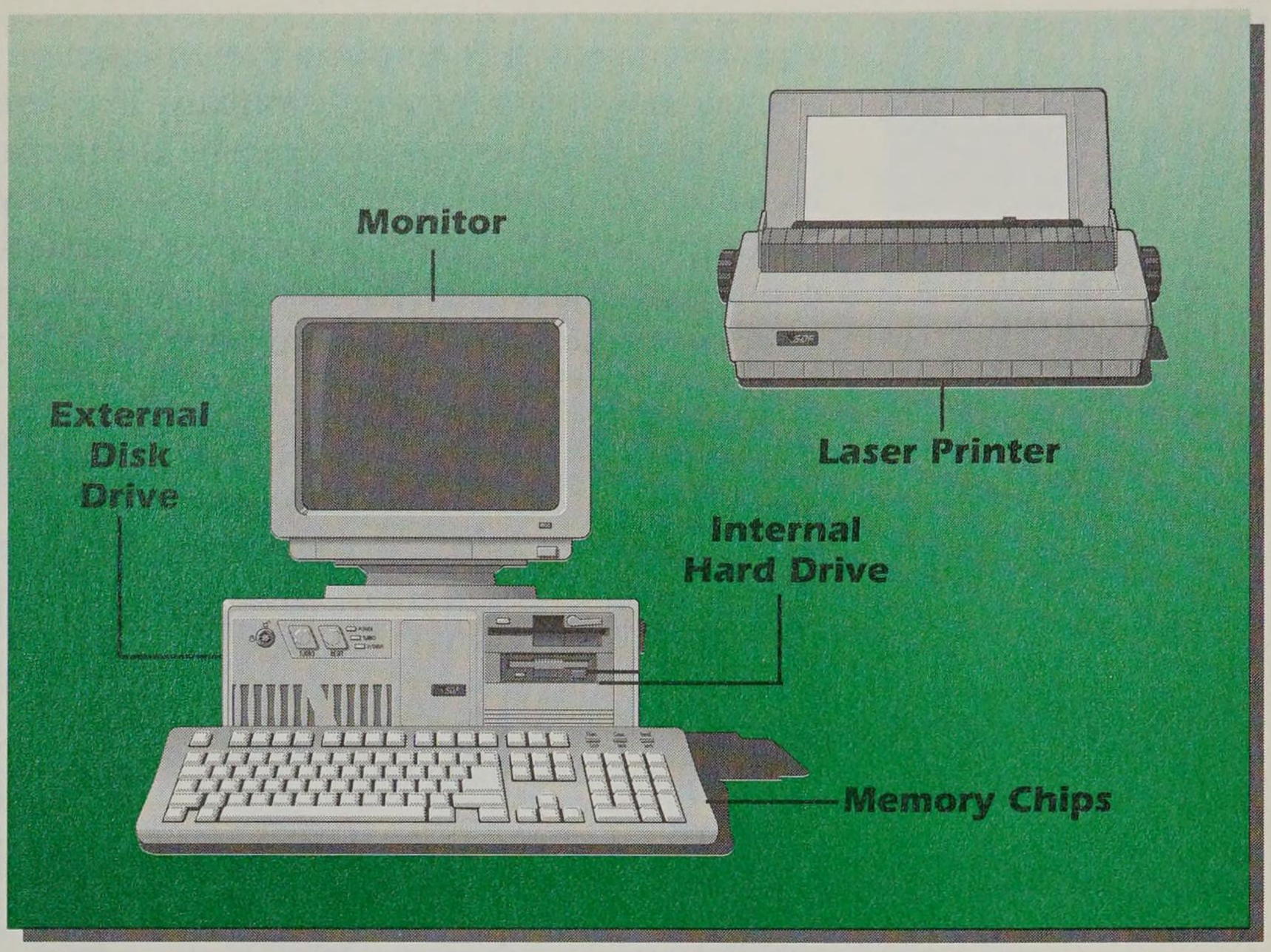

Monitor
Laser Printer
External
Disk
Drive
Internal
Hard Drive
Memory Chips

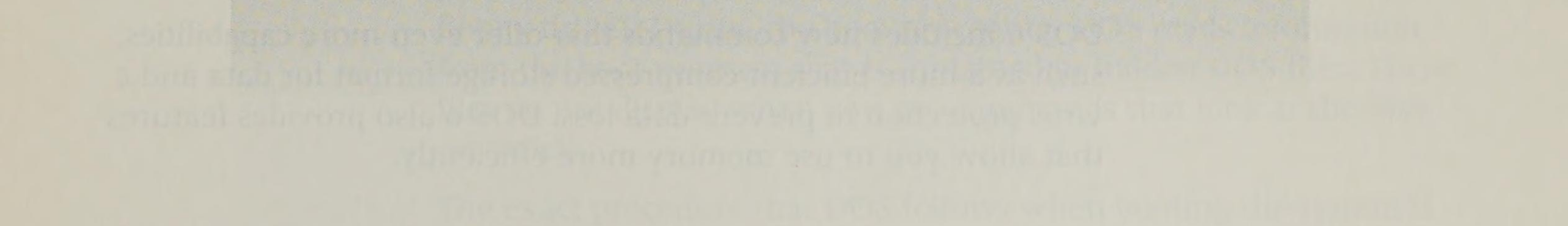
Figure 1-8

CHAPTER 2

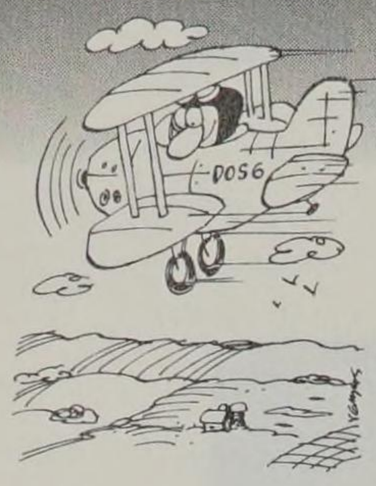
DOS BASICS

After completing this chapter, you will be able to:

- Boot the system and explain the difference between a cold boot and a warm boot.
- Recognize the DOS prompt.
- Print information from your screen.
- Explain the difference between internal and external DOS commands.
- Identify and use correct DOS command syntax.
- Use simple command entries.



OVERVIEW



As we discussed in Chapter 1, DOS is the operating system that manages all the resources of your computer system. DOS must be loaded into your computer's memory before the computer can perform any task for you. Once DOS is loaded into your system, DOS displays an indication that it is in memory. This indication is usually a DOS prompt or a short abbreviated indication that DOS is ready. It is called a prompt because it is prompting you to type in a request. If your system is set up a little differently DOS may display a full screen of information for your selection. This full screen of information also tells you that DOS is ready. The full screen display is called the DOS Shell. The DOS Shell offers commands through menu selections that you will learn about later in the book.

DOS consists of a number of programs that help you manage your data, application programs, and computer resources. DOS programs are accessed through commands you enter at the DOS prompt or select from the DOS Shell. These commands trigger programs that can transfer a copy of a file from a floppy disk to your hard drive or delete files you no longer need. There are commands to give a file a new name, to display the current version number of your DOS programs, or to display the amount of memory in your system.

DOS VERSIONS

The earliest version of DOS goes as far back as 1981 when release 1.0 was introduced for the personal computer. Since then, many improvements have been made to give you more capabilities in file management, better utilization of your computer's memory and storage, and a user-friendly Shell menu of commands. No matter what version you use, DOS is still DOS. The basic commands are all the same.

The latest version of DOS is DOS 6. This book is based on DOS 6 although much of what you learn would work with earlier releases of DOS as well.

DOS 6 includes new commands that offer even more capabilities, such as a more efficient compressed storage format for data and a virus protection to prevent data loss. DOS 6 also provides features that allow you to use memory more efficiently.

BOOTING THE SYSTEM

When you turn on your computer, activities within the computer start immediately to get it ready for your use. These startup activities are commonly referred to as booting the system. They actually include another task in addition to the boot process. Before the boot operation itself is allowed to start, a test is made of the hardware components to insure that they are working properly. After a successful test the actual boot operation begins.

The startup test that is performed is referred to as a Power-On Self-Test (POST). The keyboard, disk drives, memory, and other internal components are checked. A successful test is marked by a single beep sound and the actual boot operation to load the operating system.

In order to complete the boot operation, certain DOS instructions are needed. Some of these instructions are inside your computer's memory and others are stored on disk. They may be stored in a special location on a hard disk that is built into your system or they may be on a removable disk that can be placed into drive A (usually when your system has no hard drive). Figure 2-1 shows one popular disk drive configuration. Your system configuration and the instructions provided in your lab will indicate if you need to place a disk in drive A to start your system. The majority of computers are booted from drive C (the hard drive). To use this procedure you need to make sure that drive A is empty when you turn your system on.

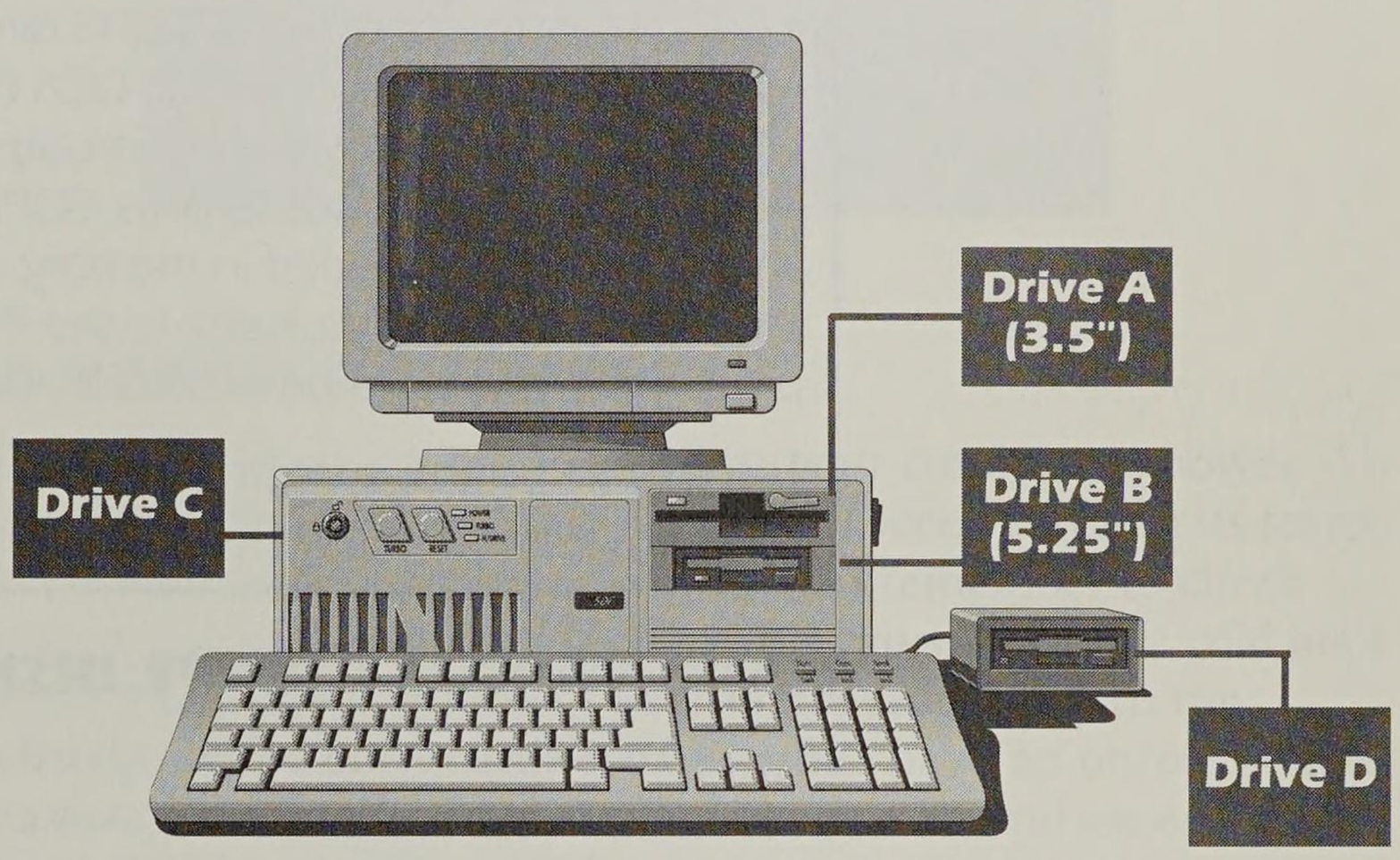


Figure 2-1
Popular system configuration with three drives

If you have a hard disk, the boot disk will be the hard disk, which is normally referred to as drive C; otherwise, you will use drive A (the floppy drive). During the boot procedure, DOS reads information from the boot program that is contained in hidden DOS files. These files do not display when you use commands that look at the files on a disk.

The exact procedure that DOS follows when booting the system is described in "The Inside Scoop on Booting." In general what happens is that your computer reads the instructions in files on disk to see if you have any special instructions that affect the process, then loads the processor for DOS commands into memory and displays a prompt telling you it is ready for your first request.

THE INSIDE SCOOP ON BOOTING

At the beginning of the boot operation your computer uses instructions stored in read-only memory (ROM). These instructions tell your computer to check drive A for a disk. If a disk is in this drive, DOS expects to find the system files, IO.SYS and MSDOS.SYS, if you are using a system other than an IBM and IBMBIO.COM and IBMDOS.COM on an IBM PC. These files are hidden on the disk so they cannot be deleted accidentally. If drive A is empty, drive C is the expected location for these files.

Your system reads special information from the DOS boot record and places it in memory. These instructions from the boot record direct your system to place data from the two hidden files into memory.

The next step is to search the root or main directory of your boot disk for CONFIG.SYS to see if there are any special directions for configuring your system. After CONFIG.SYS directions are processed, COMMAND.COM is loaded from the DOS boot directory into memory. COMMAND.COM provides input/output processing capabilities, internal DOS commands such as COPY and DIR that are always available when DOS is loaded in memory, and looks at AUTOEXEC.BAT in the root directory of your disk to see if there are DOS commands or programs that should be executed as soon as DOS is loaded.

The last step in the boot procedure is to display a prompt on the screen indicating which drive is active.

HARD VERSUS FLOPPY DISK PROCEDURE

If your DOS files reside on your hard disk, all you need to do to boot your system is make sure drive A is empty when you turn on your computer. DOS will automatically be loaded into memory using information found inside your computer and in DOS files on disk. Figure 2-2 shows how the data is located on your hard disk and how it is processed and transferred into memory.

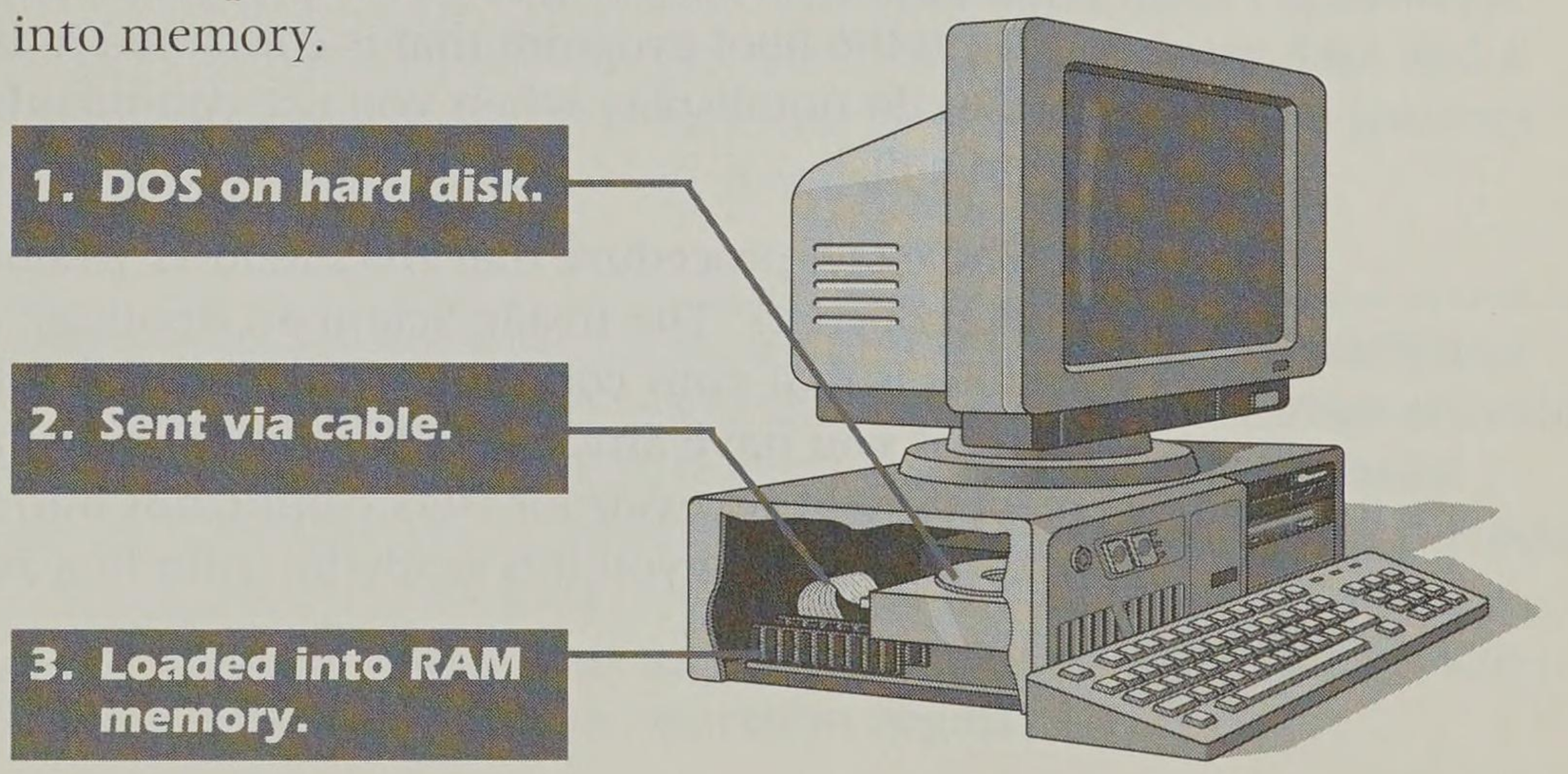


Figure 2-2
Data on hard disk is transferred into memory during boot operation

If you have a computer with only floppy drives, you need to insert the DOS system disk in drive A before turning on your computer. The system files will be loaded from your floppy disk into your computer's memory. If you also have drive B, DOS will ignore it, and it will not matter if it contains a disk. Figure 2-3 shows how floppy drives can affect booting the system.

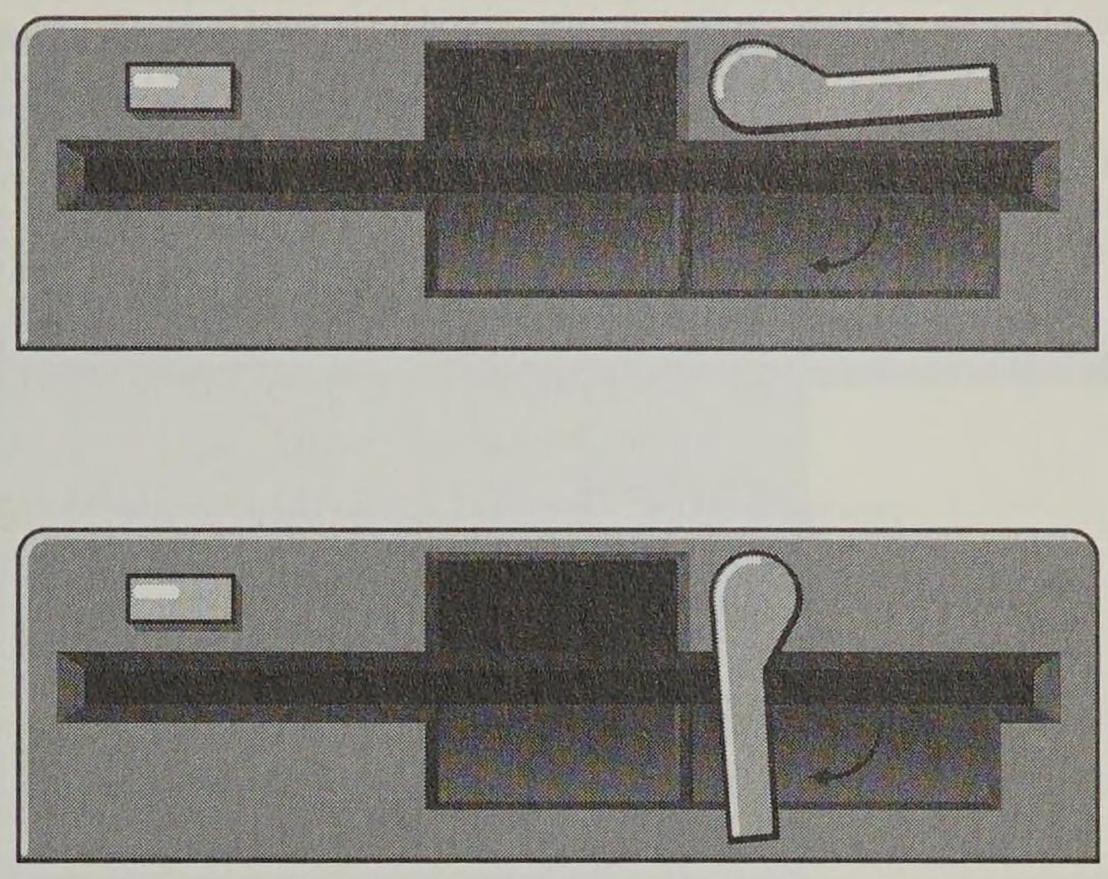


Figure 2-3
Floppy disk drives can affect the boot procedure

COLD VERSUS WARM BOOT

A cold boot is performed when you turn your computer's power switch to the "on" position and allow it to proceed through its start-up and housekeeping functions. You need to remember to check that drive A is empty before beginning this procedure. The cold boot procedure is needed only once until you are ready to turn the switch to the "off" position. A few computers have an on/off switch that is just a push button that toggles between off and on each time you press it. Although you will need to use the cold boot procedure to start each new session, it should be avoided as much as possible once a session has started. Using the cold boot procedure too often can allow electrical impulses to surge through the system and damage it. Some computers even have a time delay built into their power source that requires the system be off for a specific number of seconds before it will turn back on again.

A warm boot refers to putting a new copy of DOS into the memory of your system without turning your computer off. Since the computer stays warm, the procedure is called a warm boot although it does clear all the memory in the process. A warm boot is needed if your keyboard locks up, that is, if it does not recognize your keyed instructions. This seldom happens, so you will probably find that you are not using the warm boot procedure very often. A warm boot restarts DOS in your computer. It is performed by pressing and

holding Ctrl-Alt together, then pressing Del followed by releasing all three keys. This eliminates the need to turn your computer off and then back on again.

Both the cold boot and the warm boot clear your computer's memory. If you did not save your data to a disk, it will be lost when you reboot your computer.

GUIDED TUTORIAL 2-1

You want to use a system that is in the computer lab to do your homework. As you look around the lab there are no systems that are already on. You will use the cold boot procedure to ready a system for your use. Then you will turn it off again when you are finished.

STEP 1 Check to be sure that drive A is empty.

STEP 2 Turn the power switch to the "on" position.

Watch and take note of the messages flashing across the screen as the boot procedure takes place.

STEP 3 Turn the power switch to the "off" position.

GUIDED TUTORIAL 2-2

Occasionally an error occurs that causes your system to lock up. This means that it does not respond to your key presses or waiting for it to complete a task. It is like your system is no longer communicating with you and waiting will not solve the problem. At times the only way to correct it is to perform a cold boot, but a warm boot is worth a try as the first step. Follow these steps to see how it would work if you were in this situation:

STEP 1 Turn your computer on and look at the DOS prompt which is displayed.

STEP 2 Perform a warm boot by pressing and holding down Ctrl-Alt, then press Del.

ON YOUR OWN EXERCISES

1. Use a stop watch and time both a cold and warm boot to see if you can tell the time difference on your system.

2. Look at computers with different disk drive configurations and make a sketch of the drive layouts labeling drive A, B, and C.

THE DOS PROMPT

After you boot your system, the screen will display a DOS prompt. The DOS prompt is what DOS uses to tell you which drive is active. It also tells you that DOS is ready to respond to your requests. There may be some other information that displays on your screen above the DOS prompt depending on whether or not special requests have been placed in your startup files. Figure 2-4 shows a DOS prompt (C:\>) in the bottom line of the screen after a list of other information indicating that DOS has performed other tasks. One of the other tasks that was performed was to set the way that the DOS prompt displays.

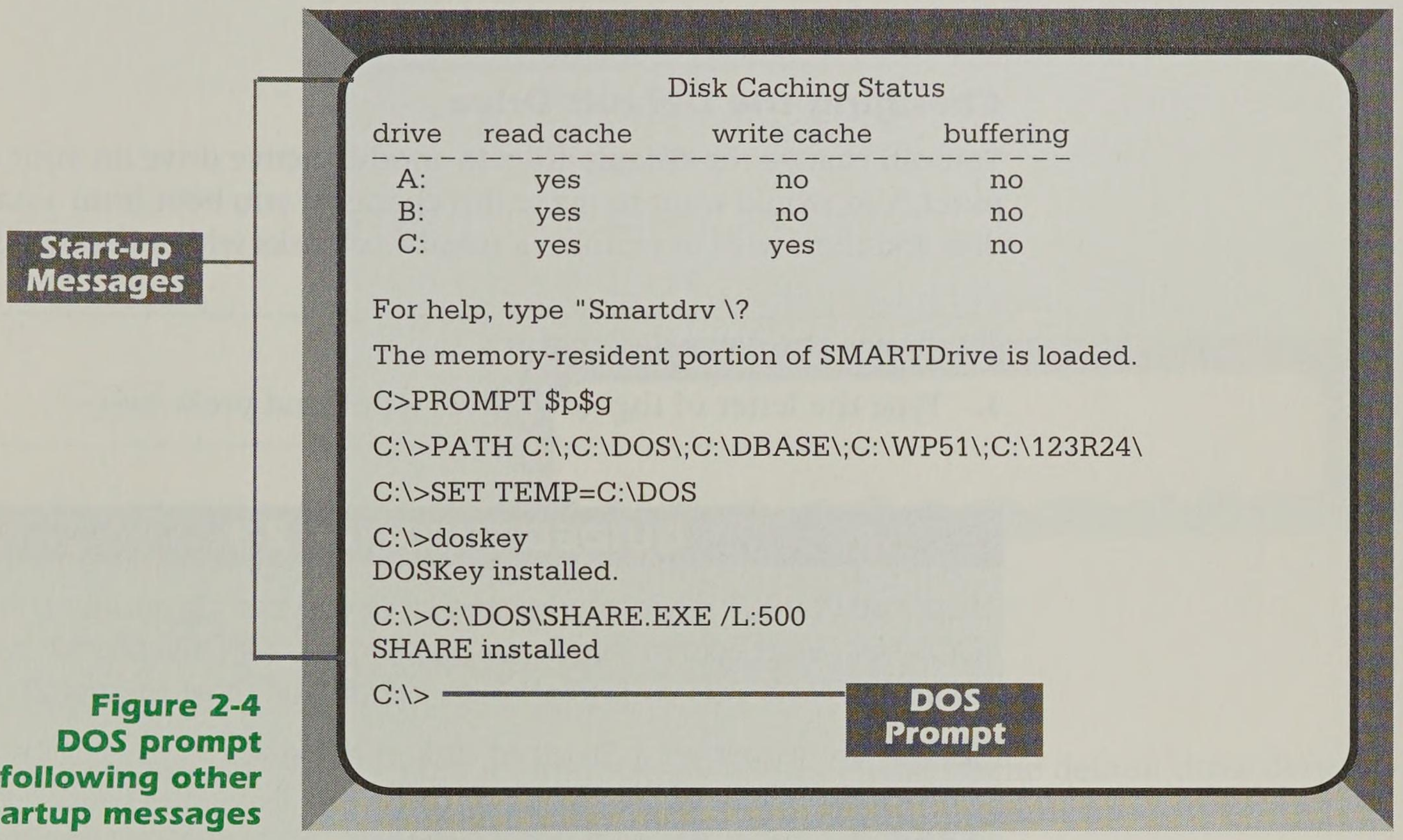


Figure 2-4 DOS prompt following other startup messages

The default DOS prompt that would have displayed without the special task that changed it consists of nothing more than the letter representing the active drive and a greater-than symbol, as in C>. The letter representing the active drive is determined by the drive you use when you start your system. This letter is likely to be a C if you have a hard disk since a hard disk is usually referred to as drive C. If you boot from drive A this letter will be an A. The greater-than sign is a separator character between the DOS prompt and any entry you enter next. Many labs and organizations have customized their DOS prompt to also show the current directory or location on their disk. This will cause the prompt to initially display as C:\> or A:\>. You will learn more about what this prompt indicates when you are introduced to disk directories in Chapter 5. Whenever the DOS prompt is displayed, your computer is waiting for your instructions.

DEFAULT DRIVE DESIGNATOR

When you first start your system, the boot drive is active since DOS defaults to this drive. You can make any drive on your system the default drive if you want to change it.

The default drive designator indicates the drive that is active. This is the drive where DOS looks for information that you request. This information is stored in units called files on a disk. The default drive is also the drive that DOS will use to save information when you do not specify a specific location. For example, if your DOS files were loaded from your hard drive, your screen may display C>, which denotes drive C as the current active drive.

Changing the Default Drive

You can change the default drive to another active drive on your computer. You would want to make this change if you boot from a hard disk and then wish to perform a number of tasks with a floppy disk.

To change the drive designator :

1. Type the letter of the new drive, type **:** and press Enter↵.

GUIDED TUTORIAL 2-3

Suppose you just performed a cold boot on your computer. The DOS files were loaded from your hard drive. The DOS prompt displays C>. Now you wish to change the default drive to drive A.

STEP 1 Insert your Student disk in drive A.

STEP 2 Type **A:**, and press Enter↵.

Your DOS prompt now displays:

```
A:\>
```

If drive A does not contain a readable disk or is empty, DOS will display the message:

```
Not ready reading drive A
Abort, Retry, Fail?
```

In response to this prompt, you would need to insert a formatted floppy disk in drive A and press **R** for Retry. If you enter **F** for Fail, DOS displays the message:

```
Current drive is no longer valid>
```

You can then enter a new drive designator before entering more commands.

GUIDED TUTORIAL 2-4

Suppose you decide that you no longer need to work with the files stored on the floppy disk in drive A and want to switch back to drive C.

STEP 1 Type **C:** and press Enter↵.

Your DOS prompt now displays:

```
C:\>
```

ON YOUR OWN EXERCISES

1. After booting your computer, change the default drive designator to another valid drive on your computer.

2. Switch the drive back to the original default drive.

3. What happens when you try to switch the default drive to drive A but leave the drive empty?

PRINTING YOUR SCREEN

From time to time, you may need to print the contents of your computer screen. You might want to use these screen prints as a way to turn in your homework exercises to your instructor. You might also use the screen prints when you experience difficulties and there is no one in the lab to help you. You can print the screens showing the problem or DOS error message and ask someone for help later when you shown them the printouts. DOS provides an easy method for printing a screen

that contains text characters. You must have a printer attached directly to your computer if you want to use this feature. Figure 2-5 shows how Print Screen transfers your data from the screen to the printer.

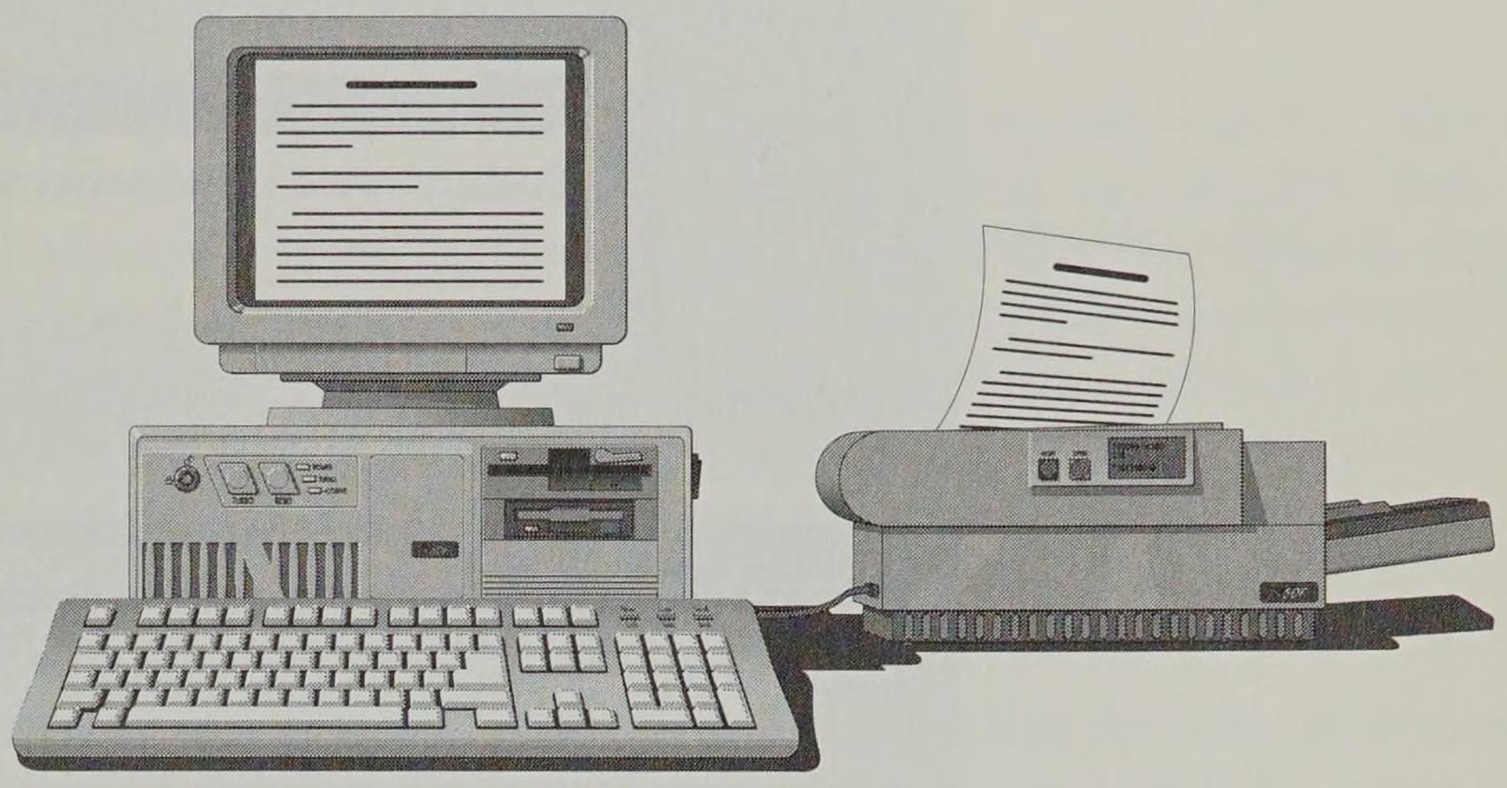


Figure 2-5
Print Screen transferring data

To print your screen:

1. Turn the printer on.
2. Press PrtScr if you have an enhanced keyboard. Older keyboards require that you hold down the ⇧ Shift key, then press PrtScr.

DOS will print one line at a time from the top of the screen to the bottom. If the contents of the screen contain characters other than text such as lines, boxes, or graphics images, they may not appear as they do on the screen. These characters are referred to as graphic characters or extended characters.

GETTING A PRINTOUT OF YOUR ENTIRE SESSION

If you are doing your homework on the computer, you might want a log of everything you do. Also, if you are listing the contents of a series of floppy disks, you want a printout of each list. You can use Print Screen in combination with another key to make the printout continue for your entire session.

If you want a continuous printout of your entire session:

1. Hold down Ctrl, then press PrtScr.

Each line displayed on the screen will be printed keeping a complete log of everything that you do. To turn off the continuous print feature, press Ctrl-PrtScr again.

GUIDED TUTORIAL 2-5

You want to get a screen print to see which files are on your hard disk. Although you will need to use a command you have not as yet mastered, the entry is easy and will provide the screen of data that you want to print.

STEP 1 Type **C:** to change the DOS prompt to C if the drive designator is not already displayed as the current drive.

STEP 2 Type **DIR/W** then press Enter↵.

DOS displays the contents of your root directory on drive C across the screen. Depending on what is in this directory, the list might look something like this:

```
Volume in drive C is MS-DOS_6
Volume Serial Number is 18E4-6D0B
Directory of C:\

[DOS]           [AGENDA]      [WINDOWS]       [ZIP_DATA]     [M2]
[COLLAGE]       [WINWORD]     [INSET]         [NORTON]       [WORD]
[TIFFANY]       [QPW]         [ZIP_APPL]      [DR20]         [BTFONTS.OLD]
[DBASE.OLD]     [BUDGET]      [PSFONTS.OLD]   [DR11]         [WP51]
[HJ2]           [DRAWINGS]    [WP60TEXT.OLD]  [DBASE]        [LETTERS]
[WPDOCS.OLD]    F.BAT         WINA20.386      COMMAND.COM    MOUSE.COM
XHTMP.BQ1       PARADOX.NET   WP{WPC}.TRE     AUTOEXEC.BAT   CONFIG.SYS
[JUNK]          [JUNK2]       [WPC60DOS]      [WP60]         [PSFONTS]
[BTFONTS]       [WP60.DOC]    FRIENDLY.ZIP

      43 file(s)     594361 bytes
                   49553408 bytes free
```

STEP 3 Press PrtScr to send a copy of the screen to your printer. You will need to use ⇧Shift-PrtScr if you do not have the newer, enhanced keyboard.

ON YOUR OWN EXERCISES

1. Place your Student disk in drive A, display the contents of the disk using DIR/W, then print a copy.

2. Set your system to print everything that displays. Display the directory of your student disk again with DIR/W, then display the directory of your hard drive with DIR/W. Turn off the continuous print option.

DOS COMMANDS

DOS provides many commands that allow you to work with data that you have stored in files. Some commands are internal, which means that they are stored in RAM. Internal commands are available as soon as DOS is loaded. Some commands are external, which means that they are stored on the hard disk. You must run a program every time you use an external command versus an internal command. The difference is like having a book on the desk next to you versus having to get up and go to the library down the hall to get the reference book that you need.

Internal commands are part of COMMAND.COM, the part of DOS that is loaded into RAM when you start DOS. External commands call on program files on the hard disk or a floppy. For example, your DOS directory has files such as CHKDSK.EXE and FORMAT.COM that DOS uses when you use the CHKDSK or FORMAT DOS commands.

All commands follow a basic structure called the command syntax. It is important that you follow the syntax rules for each command carefully, or you will not get the expected results.

INTERNAL VERSUS EXTERNAL COMMANDS

Internal commands can be executed as soon as DOS has been loaded in your computer because the instructions required to process them are stored in the memory of your system. Some internal commands you will become familiar with later in this chapter are DATE, TIME, and CLS (Clear Screen).

An external command cannot be executed until DOS locates a program on disk in order to execute the required task. DOS searches the current disk drive and directory for the program name referred by the command entered.

If you are working from a hard disk, it does not matter if the command that you enter is internal or external since DOS can read your disk to

find the command if your system is set up to check for programs in the DOS directory. If you are using a floppy disk system, you must have your DOS system disk in drive A to use an external command.

COMMAND SYNTAX

To communicate in any language you need to know some of the vocabulary and the rules for combining words into phrases and sentences. DOS has a language that it understands. This language consists of its commands and other information needed to execute them. You will need to learn some of the DOS vocabulary and some rules for creating sequences of words into correct command entries if you plan to communicate successfully with DOS. These rules are called the DOS command syntax.

DOS commands consist of up to three parts. The first part is the command name. The command name is always required because it tells DOS exactly what type of task you want it to perform. The command name requires a space after it in almost all situations. The second part, which is optional, is an object or parameter. This second part frequently identifies the object of the action such as a file, disk, or directory. The third part, also optional, contains switches. Switches refine the operation of a command and provide more specific information about what you want the command to do. When used, switches must be separated from the previous part of the command by a space. A typical three-part command may look something like this:

DIR is the command name to list all the files in the directory.

DIR <space> A: <space> /W

A: is the optional parameter that tells DOS to look at the current directory in drive A.

/W is the optional switch that tells DOS to use the wide directory display.

If you make a mistake when entering a command, DOS will display an error message. A message might look like this:

```
File not found - BUDGET.TXT
        0 filed copied
```

Table 2-1 is a list of the most common DOS error messages and their meanings.

MESSAGE	MEANING
File not found	Filename specified incorrectly or file is not in the default drive or directory.
Bad command or filename	Command misspelled or space omitted before parameter.
Invalid switch	Switch specified is not used with the current command.
Required parameter missing	Command requires a parameter but none was supplied.
Invalid drive specification	Drive specified is not valid on the system.

Table 2-1 Common DOS error messages

SIMPLE COMMAND ENTRIES

DOS has a few simple commands that consist of nothing more than the command itself. You can use these simple commands to display the current date and time settings. You can change either if you want to alter the current date and time in your system. You can display the version of DOS that your computer is using with a simple command entry. You can also tell DOS to clear your screen and display just the DOS prompt.

DATE

The DATE command displays the current date. It is an internal DOS command that is available as soon as you load DOS. If the date displayed is incorrect, you can enter a new date.

To display the date:

1. Type **DATE** at the DOS prompt and press Enter↵.

DOS displays the following screen:

```
Current date is Thu 10-07-1993
Enter new date (mm-dd-yy):
```

If you do not want to change the date, press Enter↵.

To change the date:

1. Type the new date in mm-dd-yy format, then press Enter↵.

If your computer is equipped with a clock card, you will reset the date for future DOS sessions. If your computer does not have a clock card, you should enter the current date at the beginning of each session in order to properly date new and changed files.

TIME

The TIME command displays the current time. Like the DATE command, TIME is an internal DOS command. If the time display is incorrect, you can enter a new time.

To display the time:

1. Type **TIME** at the DOS prompt and press Enter↵.

DOS displays a screen similar to the following, although the exact display depends on your computer configuration:

```
Current time is 12:54:27.68p
Enter new time:
```

The time is displayed in hh:mm:ss.ffp format. The hour (hh) is displayed as a number from 1 to 12. The minutes (mm) are displayed as a number from 0 to 59. Seconds (ss.ff) are also displayed as a number from 0 to 59, where ff represents a fractional part of a second. The p is displayed if the time represents an hour in the PM.

You can also enter a time in military format. To calculate hours after 12:59:59 PM, add 12 to the hour you wish to enter. For example, 1:00 PM would be entered as 13 (1:00 + 12), 2:00 PM would be entered as 14 (2:00 + 12), and so on. To enter 11:35 PM in military format, type 23:35:00, or in regular format type 11:35:00p and then press Enter↵.

If you do not want to change the time, press Enter↵.

To change the time:

1. Type the new time in hh:mm:ss format, then press Enter↵.

If your computer is equipped with a clock card, you will reset the time for future DOS sessions. If your computer does not have a clock card, you should enter the current time at the beginning of each session in order to properly time stamp new and changed files.

CLS

You can use the CLS command to clear your screen of all DOS entries and display only the DOS prompt. CLS is an internal DOS command.

To clear your screen:

1. Type **CLS** at the DOS prompt, then press Enter↵.

This command is helpful when you become more familiar with DOS and begin to enter a series of DOS commands. Each command uses the next line on your screen. It is sometimes helpful to clear the screen when it becomes full in order to begin displaying results and messages at the top of your screen again.

VER

VER is the command that checks which version of DOS is installed on your system. VER is an internal DOS command.

To display the current version of DOS:

1. Type **VER** at the DOS prompt, then press Enter↵.

If you are using DOS 6, the screen will display the following message:

```
MS-DOS Version 6.00
```

GUIDED TUTORIAL 2-6

If daylight savings time is implemented in your area, you will need to set your clock ahead by one hour each spring. You will want to change the time setting in your computer, as well. If the current setting is 9:15:00 and you want to change it to 10:15:00 to coincide with daylight savings time, you would:

STEP 1 Type **TIME** and then press Enter↵.

STEP 2 Type **10:15:00** and then press Enter↵.

STEP 3 Type **TIME** and enter the current time to reset the clock.

GUIDED TUTORIAL 2-7

You have asked to borrow a friend's computer while he is at lunch. He told you that he has DOS version 6.0, but said that it was installed three years ago. Since DOS 6 was not available then, you need to check which version is in the machine. To check the version:

STEP 1 Type **VER** at the DOS prompt and press Enter↵.

If the following screen comes up, you know that you should look for a DOS 5 manual.

```
MS-DOS Version 5.00
```

If the screen indicates DOS 6, you know the system was installed recently.

GUIDED TUTORIAL 2-8

Your screen is full of different DOS messages and failed attempts to look at the contents of drive C. You have just realized that part of your problem is that drive C is not active. Follow these steps to make drive C active and clear the screen for a fresh start:

STEP 1 Type **C:** and press Enter↵.

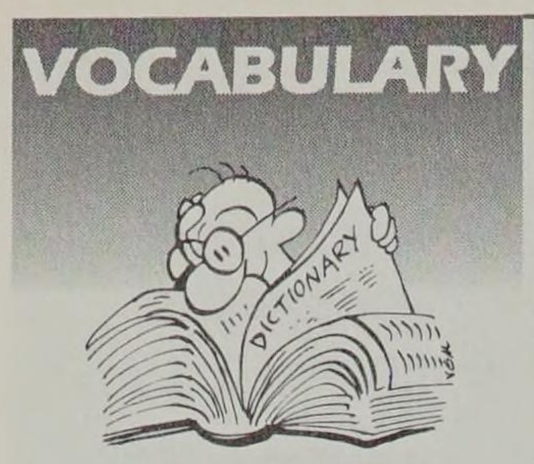
The prompt displays like this:

```
C:\>
```

STEP 2 Type **CLS** and press Enter↵.

ON YOUR OWN EXERCISES

1. Change the date in your system to 12/25/93, and then change it back to the current date.
2. Display the contents of your Student disk, then clear your screen.
3. Check which version of DOS is being used on your system.
4. In the fall you need to set the time in your computer back by one hour when daylight savings time ends. Check the current time in your system, then set it back by one hour.



Cold boot
Turning your computer switch to the on position and loading the operating system.

Command syntax
The correct format required when entering a DOS command to execute. DOS commands consist of up to three parts. The first, which is required, is the command name. The second and third parts, which are both optional, allow you to define an additional parameter and to add one or more switches that expand the capability of that command.

Default drive designator
After booting your system, DOS displays the current or active drive, for example, C>.

DOS prompt
The characters that display to tell you that DOS is loaded and waiting for your request.

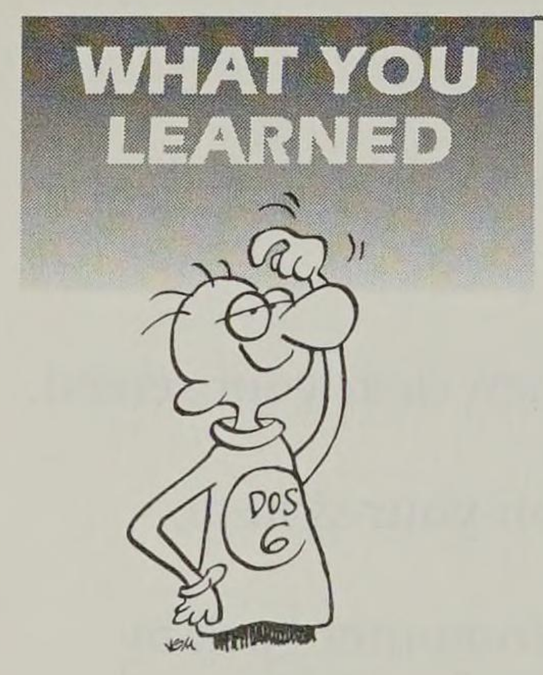
External command
A DOS command that requires DOS to locate a separate program in order to execute the required task.

File
An organized collection of data stored on disk.

Internal command
A DOS command that can be executed as soon as DOS has been loaded in your system.

Power-On Self Test (POST)
The test that is performed automatically each time you turn your system on to insure that all components are working correctly.

Warm boot
With the computer system already on, pressing the Ctrl-Alt-Del keys together to clear the memory and reload the operating system.



In this chapter you learned the following:

- How to perform a warm and cold boot procedure.
- What the DOS prompt indicates.
- How to print information on your screen.
- The difference between an internal and external DOS command.
- The importance of following the DOS syntax for a command.
- How to enter simple DOS commands such as DATE, CLS, and VER.

REVIEW QUESTIONS

Answer each of the following with *true* or *false*.

_____ **1.** You can use the DATE command to change both the date and time in your system.

_____ **2.** On newer model computers you must always use the DATE command to set the system date.

_____ **3.** The VER command lets you set which version of DOS you want to use.

_____ **4.** The command syntax specifies the rules for entering a specific command.

_____ **5.** A cold boot requires you to use the Ctrl-Alt-Del keys.

_____ **6.** The boot procedure loads DOS into your system.

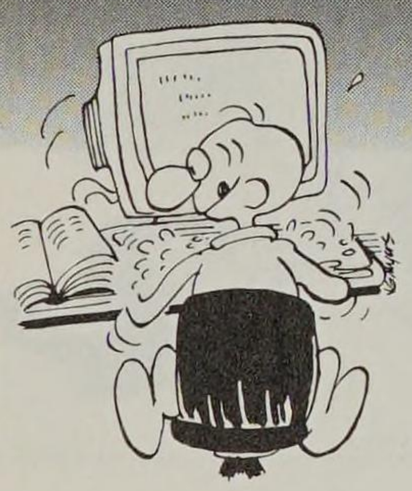
_____ **7.** The default drive is the drive where DOS expects to read and write data.

_____ **8.** There is a Print Screen key which will print the current contents of your screen.

_____ **9.** An internal command is one that can be executed as soon as DOS is loaded since the processing instructions for it are in memory.

_____ **10.** An external command is one that you define yourself.

IN THE LAB



1. Perform a cold boot on your computer.
2. Check the current date and time without making a change.
3. Clear the screen.
4. Perform a warm boot.
5. Look at which version of DOS is active in your system.
6. Clear the screen again.
7. List the steps that you would take to do each of the following:
   a. Change the current date to January 1, 1994.
   b. Change the current time to midnight.
   c. Change the current time to 8 PM.
   d. Check the current version of DOS in your machine and clear the screen.

THINKING ON YOUR FEET

While your friend's computer is in the repair shop, she is using a loaner to finish an important project. She has mentioned to you that she is having several problems. What advice would you give her to solve each problem:

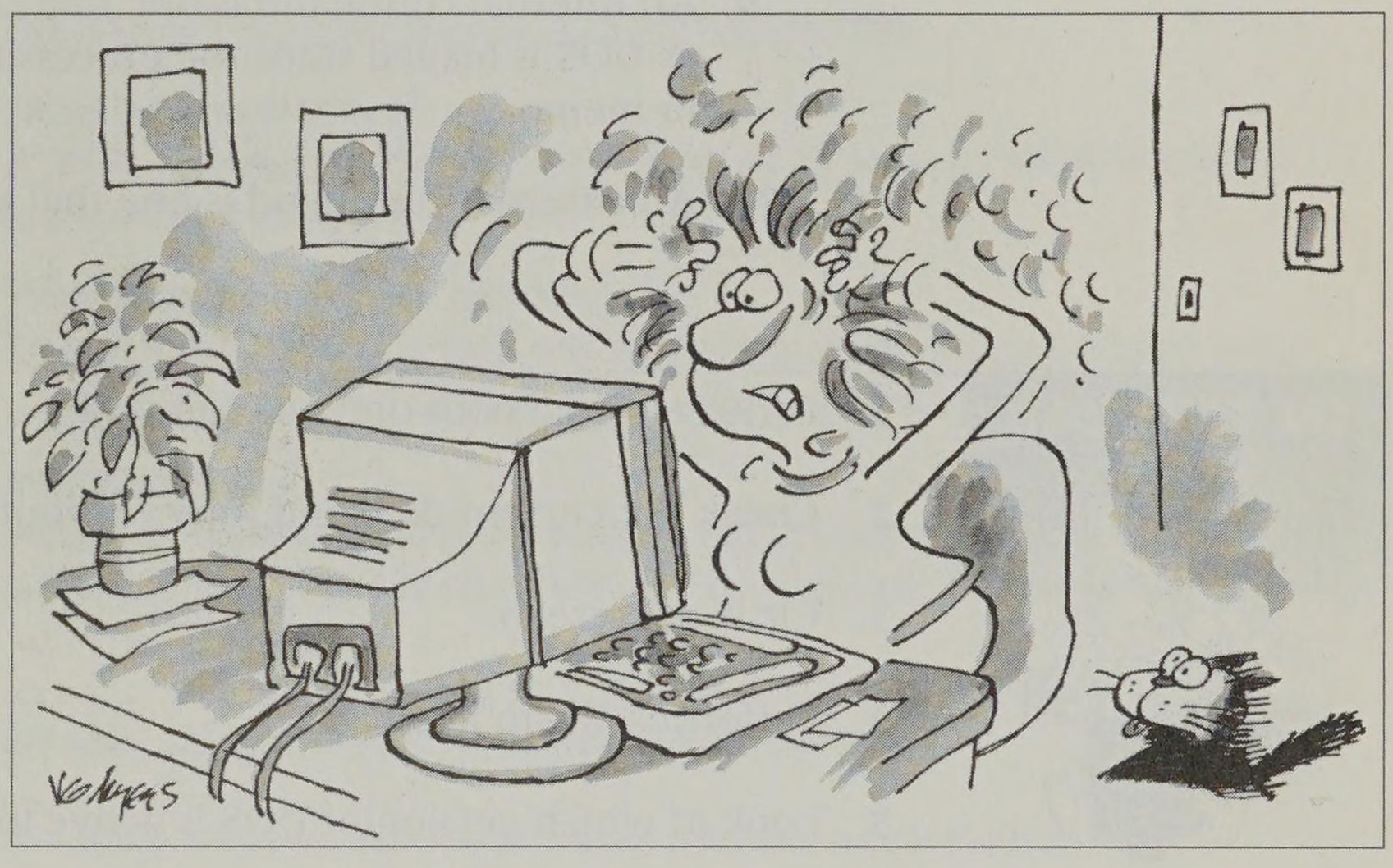
a. All of the files that she has created with this computer have a date stamp of 1-1-80. This makes it difficult for her to determine the latest copy of files written to floppy disks.

b. She has been unable to use some commands that she knows were added to DOS 6 and is not certain which release of DOS is stored on her system.

c. She would like a printout showing the files on drive A and drive C. She knows you use DIR/W, but does not know how to get a printout of this information.

d. The DOS command prompt looks like A:> and she wants it to read C:>.

e. Her system locks up when she exits the word processing system on the computer and she would like to start another program without turning the system off and on again.

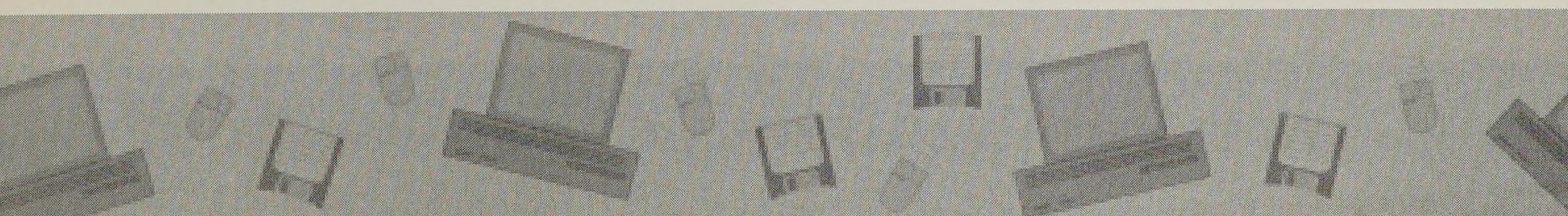


CHAPTER 3

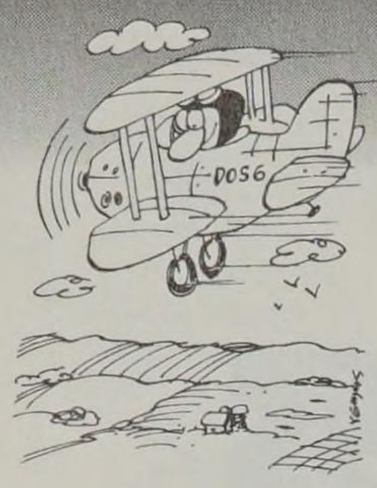
WORKING WITH DISKS

After completing this chapter, you will be able to:

- Describe the different types of disks.
- Format and unformat a disk.
- Add a volume label to a disk.
- Display the contents of a directory.
- Display the status of a disk.
- Copy the contents of one floppy disk to another floppy disk.
- Compare the contents of two floppy disks.



OVERVIEW



Whenever you use your computer, you are working with data. Data is nothing more than information that is important to you. It might be a letter, a budget, a drawing of your new house, a program, or a collection of information on all of your company's clients. When you work with the computer, your data is in an electronic format that is stored as an electronic file on either a hard or a floppy disk. You can think of these files that contain your data as sheets of electronic paper. The number of these sheets that are needed are determined by the amount of data that you have to record. You do not need to worry about adding sheets when you are using an electronic file; they are not actually sheets of paper, and DOS automatically handles getting you the extra space when it is needed.

The disks that you use provide a permanent storage medium for program files as well as data files that contain budgets, memos, or other pertinent data. Disks are designed to store your files efficiently and to provide you with quick access to the information that they contain.

DOS offers a number of commands that help you organize and manage your disks. You can use these commands to prepare a disk to store information as well as to look at the information that a disk contains. If you have a hard disk, it is probably already set up for information storage. If so, do not prepare the disk a second time since doing so would cause you to lose the information that the disk contains.

If your hard disk is not prepared, refer to the DOS installation instructions in Appendix A.

Since most of the preparation work that you need to do is with floppy disks, the initial focus of this chapter is on these removable disks. Later topics look at both floppy and hard disk usage.

TYPES OF DISKS

There are two basic types of disk storage: hard or fixed disks and floppy or removable disks. Figure 3-1 shows a system that has two floppy disk drives (a 5¼" and a 3½"), and a fixed disk Since the fixed disk does not need to be accessed from outside, the only evidence that a machine contains one is the disk drive light on the outside of the machine.

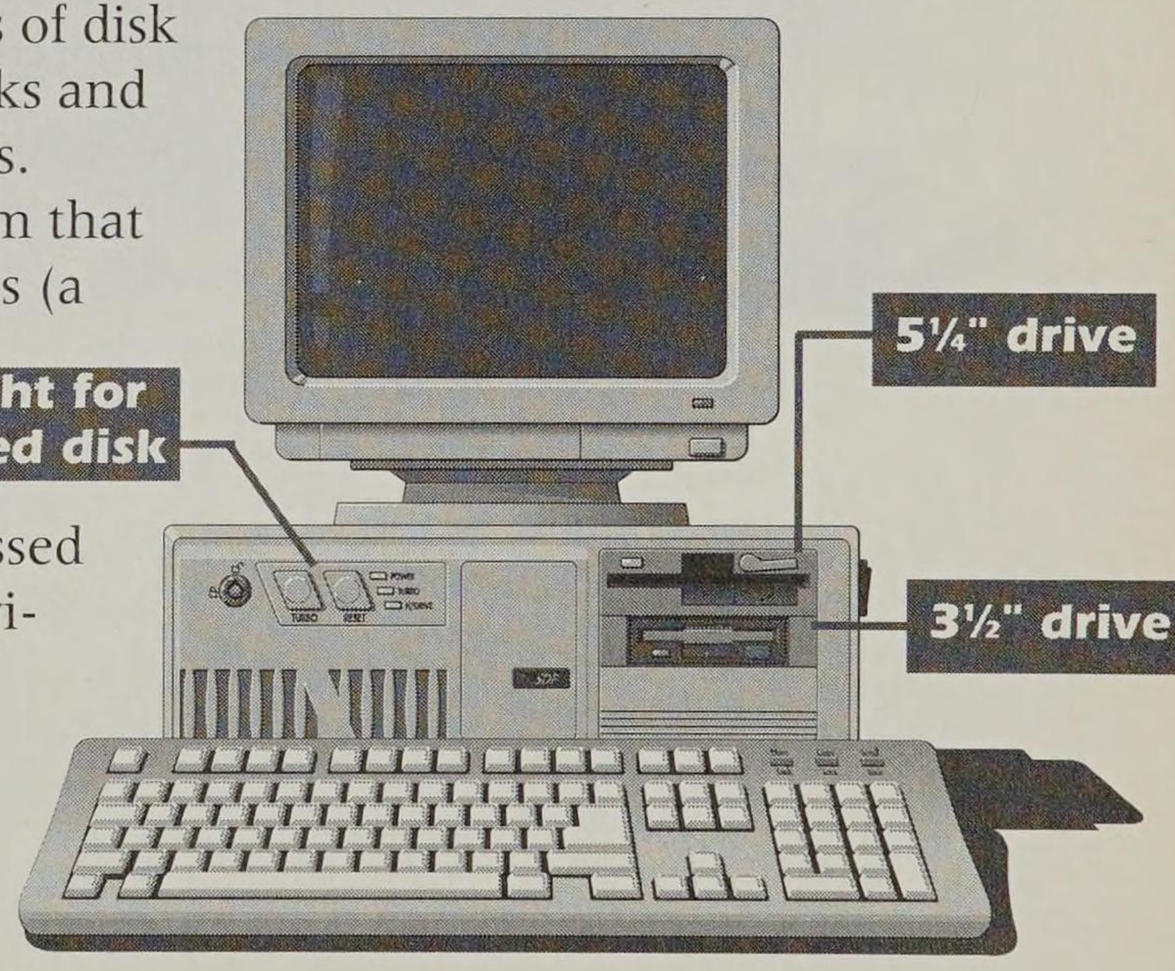


Figure 3-1
A basic system configuration

Fixed disks are frequently called hard disks. Figure 3-2 shows an open system unit where it is easy to view the fixed disk drive. The term *fixed* is easy to understand since it means that the disk is fixed within the computer. The term *hard* comes from the fact that there is a hard platter-like surface inside the disk where information is written. Although there are removable disks that have a hard surface, this is most often a characteristic of fixed disks.

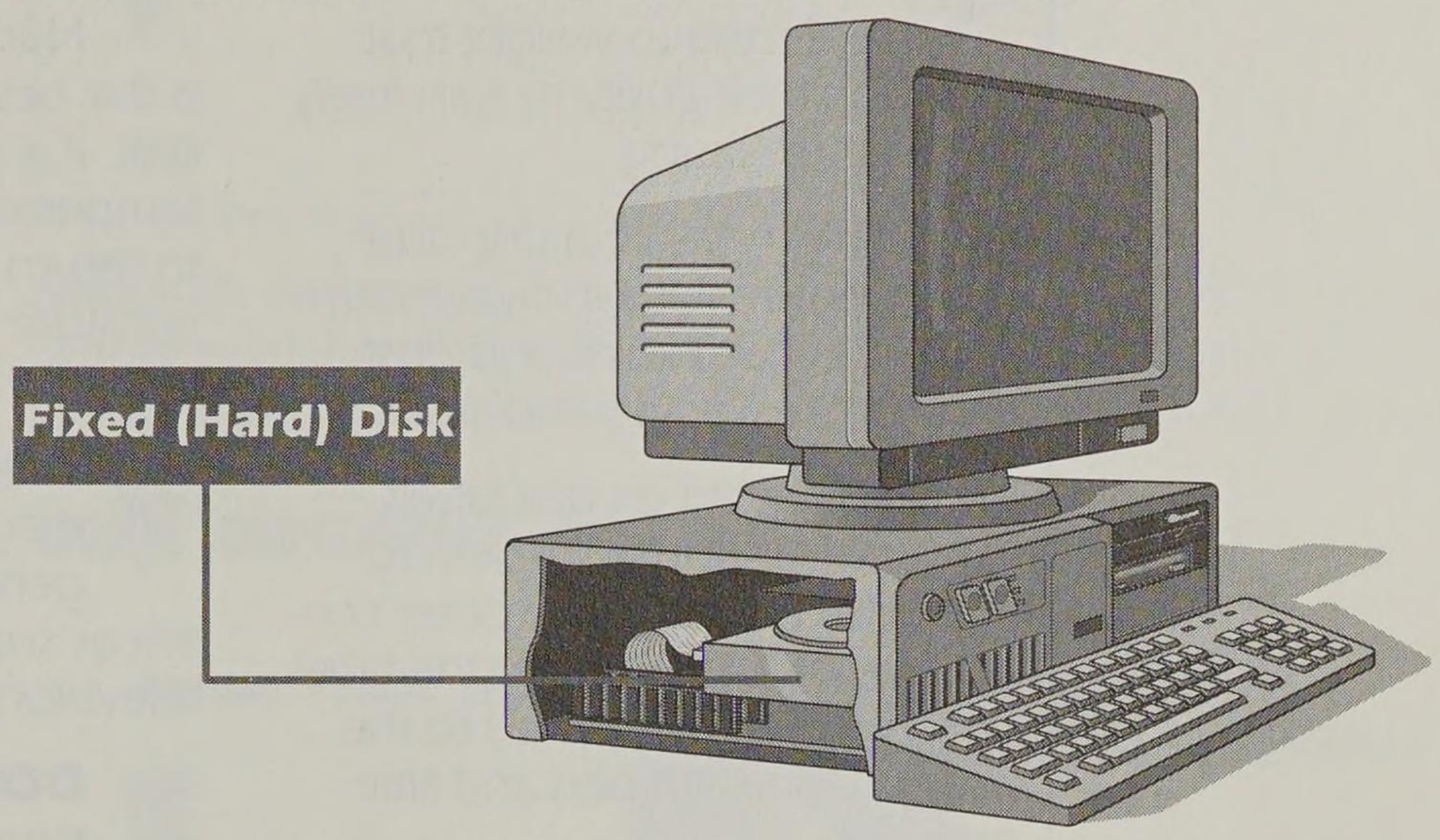


Figure 3-2
A system showing a fixed disk drive

Floppy disks are available primarily in two sizes: 5¼ inches and 3½ inches, as shown in Figure 3-3. The type of disk you select depends on the disk drive that you purchased with your system. Besides the obvious difference in sizes, the disks also differ in appearance, as Figure 3-3 shows. The 5¼-inch size has an oval cutout area where the surface of the disk is exposed. The 3½-inch size has a sliding metal shutter that protects the disk surface. It does not slide across to expose the disk surface until the disk is safely in your disk drive. The outer covering of the two disks is also quite different, with the 5¼-inch disk having a more flexible cover than the 3½-inch disk.

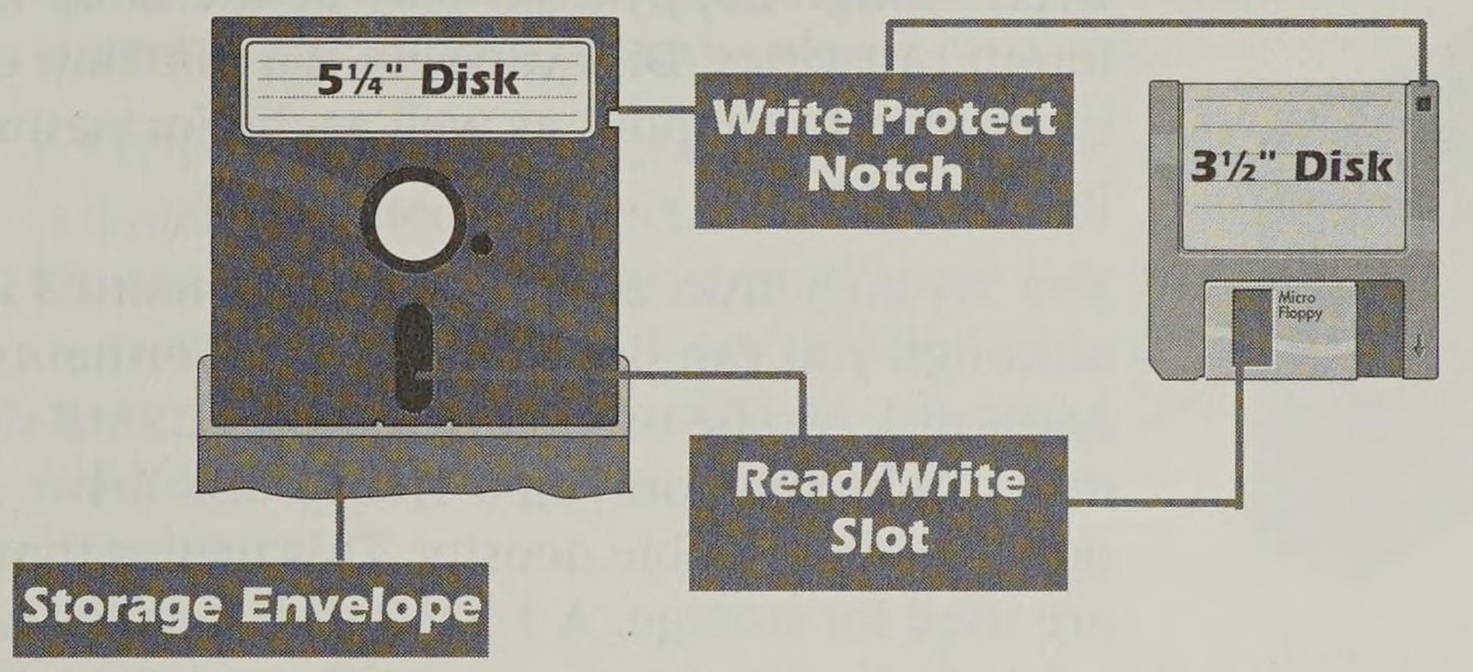


Figure 3-3
Two types of floppy disks

It is important not to damage the surface of the disk where data is written. Magnetic fields, dust, and spilled soft drinks are among the numerous hazards that can affect your disk and the readability of the information that you store on it. For more information on disk care read "The Inside Scoop on Disk Care."

THE INSIDE SCOOP ON DISK CARE

Disks have a long life and can be used over and over for storing data. To get the maximum life from your disk, follow this list of DOs and DON'Ts carefully:

DO store your disks upright in a box where they are not subjected to weight that may limit their ability to spin freely within their casing.

DO maintain a dry, dust-free area around your computer as liquids and dust can damage drives and disks.

DO write on disk labels before applying them to disks with flexible outer covers. If you must write on the label once it has been applied to the disk, use a felt-tip pen and little pressure.

DO heed the first sign of disk drive trouble by having a drive checked when it makes unusual noises or when you have soft failures (failures that are overcome by repeatedly trying to use the disk).

DON'T subject a disk to temperature extremes. Normal room temperature is the best temperature for a disk. If a disk is subjected to temperature extremes, allow it to return to normal room temperature before checking to see if it is still readable.

DON'T place disks near magnets or magnetic fields generated by electric appliances such as vacuum cleaners, televisions, and the like.

DON'T take a disk through the walk-through scanner at the airport. Have them hand-checked as even the conveyor can subject them to magnetic fields.

STORAGE CAPACITY

Even though floppy disks may be the same size, they may have different capacities. Disk capacity is a function of the capacity the disk is certified to support, as well as the formatting procedure used to prepare the disk.

The 5¼-inch disks are most often formatted for 360K or 1.2MB, although you can use a single-sided format that has only 180K. A 360K disk can be used in a 360K or 1.2MB disk drive, but a 1.2MB disk can be used only in a 1.2MB disk drive. A 360K disk is called double sided/double density. This means that both sides of the disk are used for storage. A 1.2MB disk is called high density, which refers to its extra storage capacity.

The 3½-inch disks are formatted for 720K or 1.44MB. The 720K is double sided/double density, and the 1.44MB is high density.

Once a disk is formatted, you can use it in a drive with the same capacity or a higher capacity. This means that you can use a disk for-

matted to have a 360K capacity in a drive that has a capacity of 1.2MB although you can store only 360K of data on the disk. Table 3-1 shows the different capacity options for disks in regular use today.

Table 3-1 Disk sizes and capacities

DISK SIZE	DENSITY	CAPACITY
5¼"	Single-sided	180K
5¼"	Double	360K
5¼"	High	1.2MB
3½"	Double	720K
3½"	High	1.44MB

Although you can read all disk densities in a high-density drive, you cannot read a high-density floppy in a double-density drive. In other words, there is no downward compatibility for the high-density disks.

DISK ORGANIZATION

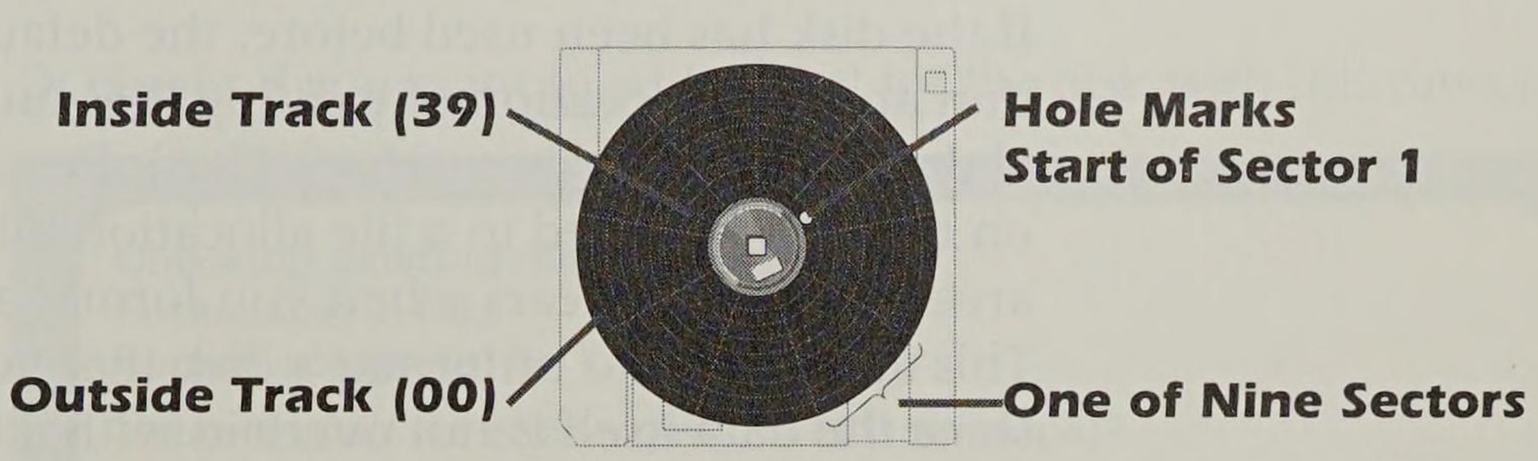


Figure 3-4 An exposed floppy disk

If you take the protective cover off a floppy disk, it would look like a platter or flexible record, as shown in Figure 3-4. A hard disk may have several platters. Disk platters are divided into tracks and sectors. Tracks are concentric circles that indicate where data can be placed. They are created by the operating system during the formatting procedure. DOS places a pattern of 40 tracks on a double-sided/ double-density disk and 80 tracks on a high-density disk. Figure 3-5 illustrates the pattern of tracks placed on a disk.

A sector is the unit of storage on a disk. The disk is equally divided into sectors that resemble pie-shaped wedges, as shown in Figure 3-5. Two or more sectors on a track are referred to as a cluster. All information stored on disk requires the use of at least one cluster.

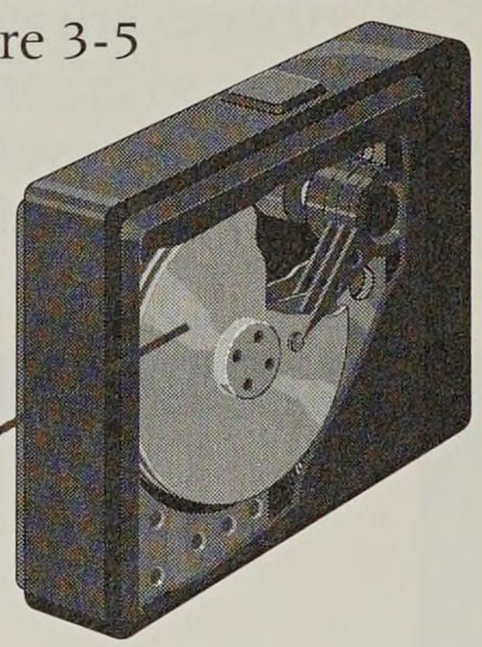


Figure 3-5 An exposed hard disk

FORMATTING DISKS

Before you can use a disk for the first time, it must be prepared with the DOS formatting process. Your hard disk was probably already formatted when your system was purchased. Floppy disks may or may not be preformatted when you buy them.

Formatting performs four functions:

1. It writes a pattern over the surface of the disk to mark tracks and sectors.
2. It marks any bad areas on the disk to prevent your data from being written over these areas.
3. It sets up a mechanism for recording files that you store on the disk. This includes setting up a file allocation table (FAT) to maintain a record of free areas on the disk that can be used for file storage. DOS checks the FAT before writing a file to the disk. FORMAT sets up a main or root directory on the disk as part of the mechanism for recording files. Everything is recorded in the root directory unless you set up additional directories and tell DOS to store data there.
4. It allows you to create a label or name for the disk.

If the disk has been used before, the default is to clear the information about the location of existing files on the disk, but not the actual data in the files themselves. The information about the files stored on the disk is placed in a file allocation table (FAT) and this is the area that DOS 6 clears when you format a disk that contains data. This allows you to unformat a disk that you formatted by mistake since the data itself is not overlaid with a format pattern.

To facilitate this potential restoration, DOS 6 also creates a mirror file containing system information when formatting a disk that was previously used with the default quick format procedure. In situations where DOS 6 does not recognize the format of the information on the disk, it does a complete format, and you are not able to unformat the disk. For a disk that does not contain data, part of setting up a mechanism for storing data is creating both a file allocation table and a root directory that stores the name, size, creation date and time, and file attributes for the files that the disk contains.

A disk that has not been formatted previously requires a complete format procedure to have the four tasks mentioned earlier performed. When you elect to use this procedure on a disk that already contains data, you want to add the /u switch after your format request for an unconditional format of the disk that cannot be unformatted at a later time. Other switches provide options such as formatting a disk as low density when the drive supports high density and adding system files to the formatted disk.

BASIC FORMATTING

To format a floppy disk, you must use the FORMAT command followed by the drive that contains the disk.

To format a disk:

1. Type **FORMAT** at the DOS prompt, press Spacebar, then type the drive where the disk is located, for example, **a :** (colon), and press Enter↵.

   DOS displays a message denoting the drive you specified that contains the disk to be formatted, as shown below. Make sure this is correct before continuing with this procedure. If you specified the wrong drive, press Ctrl-C and start over.

```
C:\>format a:
Insert new diskette for drive A:
and press ENTER when ready . . .
```

2. Press Enter↵ to continue the procedure or press Ctrl-C to cancel it.

   DOS asks if you want to add a label for the disk with this message:

```
Checking existing disk format.
Formatting 1.44M
Format complete.

Volume label (11 characters, ENTER for none)?
```

3. Type up to 11 characters to enter a name and press Enter↵ to name the disk or just press Enter↵ to skip this if you do not want to label the disk.

   After pressing Enter↵ to continue with the procedure, the screen displays information about how the disk was formatted, as shown below. The FORMAT command displays the capacity of the disk, any space used by the system files, the space available, the size of each allocation unit, and if any bad sectors exist. Once the first disk is formatted, DOS always prompts to see if you want to format another disk.

```
1457664  bytes  total disk space
 145664  bytes  available on disk

    512  bytes in each allocation unit.
   2847  allocation units available on disk.

Volume Serial Number is 0F5B-16FA

Format another (Y/N)?
```

4. Type **N** and press Enter↵ to stop formatting disks, or type **Y** and press Enter↵ if you want to format another disk.

There are many additional features that you can select when formatting a disk. Additional features can be used by adding switches after the command itself. Switches typically consist of a slash (/) followed by a letter or number representing one of the features available for a command. Other switches require additional entries to specify the exact features you want to use. Switches that require additional entries are followed by a colon and a word indicating the type of entry that follows. All switches are specific to a command and cannot be used with other commands. For example, you can enter the FORMAT command with the /s switch to copy system files to the disk that you are formatting, but /s will not work with the CLS command you learned in Chapter 2.

Throughout this book, you will see commands that have switches listed in a box. Although examples are not provided for all the switches for any command, you can look through the options after learning the basic command to see if you want to add any of the listed switches to your entries. The FORMAT command options are shown in the Command Syntax section below.

FORMAT COMMAND SYNTAX

The FORMAT command is used to prepare disks for data storage. There are a number of different ways to record the command since certain combinations of switches are commonly used together. Besides a simple entry such as FORMAT B:, some of the common ways that this command is recorded follow:

FORMAT drive [/q|u][/v:label] [/s|b]

FORMAT drive [/f:size][/q|u][/v:label][/s|b]

FORMAT drive [/1][/4][/q|u][/v:label][/s|b]

FORMAT drive [/n:tracks][/t:sectors][/q|u][/v:label][/s|b]

FORMAT drive [/8][/q|u][/s|b]

The syntax for the FORMAT command is:

FORMAT drive /b /f:size /n:sectors /q /s /t:tracks /u /v:label /1 /4/ 8

drive specifies the drive where you will put the disk to be formatted.

/b copies the DOS hidden files MSDOS.SYS and IO.SYS to the disk after formatting.

/f:size formats to a different capacity than the default drive. The disk must be able to support the selected format. For example, a 1.2MB drive can support 360K as a size, but a 360K drive cannot support 1.2MB.

/n:sectors specifies a number of sectors for a disk. This switch cannot be used when /f is used.

/q performs a quick format that erases the file allocation table and root directory.

/s copies COMMAND.COM, MSDOS.SYS, and IO.SYS to the newly formatted disk. You can also use the entry SYS A: as a separate command entry to transfer system files to a disk in drive A that has already been formatted.

/t:tracks specifies a number of tracks for a disk. This switch cannot be used when /f is used.

/u performs an unconditional format that cannot be unformatted.

/v:label adds the specified volume label of up to 11 characters to the disk.

/1 formats one side of the disk.

/4 formats a 5¼-inch high-capacity drive disk to 360K.

/8 formats a disk to have only eight sectors to be compatible with versions of DOS prior to DOS 2.0.

ADDING SYSTEM FILES

If you want to boot your system from a floppy disk, that disk must contain some operating system files. The FORMAT command includes a switch that will transfer essential system files to the disk. When you want to copy these files after formatting you would enter:

FORMAT A: /S

The /s switch instructs DOS to add these system files to your disk: IO.SYS, MSDOS.SYS, and COMMAND.COM. The first two files are hidden files; that is, they do not appear when you display the contents of the disk.

If you wish to add the essential system files to a disk that is already formatted, enter the following commands:

SYS A:
COPY \COMMAND.COM A:

The SYS command transfers the hidden files to the disk in drive A. The COPY command transfers the COMMAND.COM file, which processes DOS commands from the root directory of the current drive to the disk in drive A.

GUIDED TUTORIAL 3-1

You just purchased an extra disk to use as a work disk. Before you can use it, you must format it. Follow these steps to format the disk from the C prompt:

STEP 1 Type **FORMAT A:** and press Enter↵.

STEP 2 Press Enter↵ to complete the process without typing a volume label, or type a name of from 1 to 11 characters for a volume label before pressing Enter↵.

STEP 3 Type **N** and press Enter↵ to indicate that you do not want to format another disk.

STEP 4 Press PrtScr to check your work.

GUIDED TUTORIAL 3-2

You want to create a bootable disk for drive A in order to add the system files to a copy of your program files to eliminate changing the disk in the disk drive when the system is booted. Drive C is the active drive.

STEP 1 Place the Work disk you formatted in the first tutorial in drive A.

STEP 2 Type **SYS A:** and press Enter↵.

```
C:\>SYS A:
System transferred.

C:\>
```

STEP 3 Type **COPY \COMMAND.COM A:** and then press Enter↵.

You can now use this disk to boot your system.

STEP 4 Type **DIR/W** to see that the hidden files do not display in the listing of the disk contents.

GUIDED TUTORIAL 3-3

If you wanted to delete the system files that you just added to the work disk without trying to find out how to delete hidden files and removing all the files individually, you could simply reformat the disk.

STEP 1 Place the Work disk in drive A.

STEP 2 Type **FORMAT A:** and press Enter↵.

STEP 3 Press Enter↵ without typing a label.

STEP 4 Type **N** and press Enter↵ to indicate that you do not want to format additional disks.

GUIDED TUTORIAL 3-4

To use the format command to prepare a disk as a system disk, follow these steps:

STEP 1 Place the Work disk in drive A.

STEP 2 Type **FORMAT A: /s** then press Enter↵.

STEP 3 Press Enter↵ to complete the process without typing a volume label, or type a name of from 1 to 11 characters for a volume label before pressing Enter↵.

STEP 4 Type **N** and press Enter↵ to indicate that you do not want to format another disk.

GUIDED TUTORIAL 3-5

You want to insure that the disk is formatted as a low-density disk (360K) even though the drive that you are using may support high density. Follow these steps:

STEP 1 Type **FORMAT A: /f:360** and press Enter↵.

STEP 2 Press Enter↵ again to proceed without adding a volume label.

STEP 3 Type **N** and press Enter↵ to indicate that you do not want to format any more disks.

GUIDED TUTORIAL 3-6

You want to add the volume label TAXES to the disk that you will format in drive A. Follow these steps:

STEP 1 Type **FORMAT A: /v:TAXES** then press Enter↵.

STEP 2 Type **N** and press Enter↵ to indicate that you do not want to format additional disks.

ON YOUR OWN EXERCISES

1. Format a new disk or a used one that does not contain any needed information.

2. Format a disk adding the system files. Boot the system with that disk.

3. Format a blank disk using HOMEWORK as the volume label.

4. Format a disk on one side only, then reformat it with a regular format operation.

5. Format a disk with an unconditional format that cannot be unformatted.

UNFORMATTING

Unformatting refers to the process of removing the DOS format from a disk to allow you to access the data it contained before formatting. Unformat is basically a recovery procedure to be used when you just realized that you formatted the wrong disk. Although it has some restrictions, it is your only hope if you accidentally format a disk containing valuable data. It is not a command that you will want to try with disks that do not need unformatting. You could damage the data on your good disks if you use it with them.

The UNFORMAT command in DOS 6 is different than the version supplied with DOS 5 because the MIRROR command is no longer part of DOS 6 and a mirror file is created automatically by a quick format of a disk. The MIRROR command stored a copy of the main directory and file allocation table to use when unformatting the disk. The File Allocation Table and main directory tell DOS the location of each file on the disk; they are essentially a map of the disk surface. Since users were not running MIRROR every time the disk was updated, the MIRROR file sometimes did not reflect up-to-date contents for the file allocation table and directory, and this command is no longer part of DOS 6. Now the needed data is put on the disk with a quick format and it is up-to-date unless you have stored data on the disk. Mirror files are not something you need to worry about, it is shown here only to put the data that displays on the screen during UNFORMAT into context and to explain the existence of a switch for UNFORMAT that still refers to the MIRROR command for those that added it to their disks with DOS 5.

When you execute the FORMAT command, DOS performs a quick format by default. A quick format erases the File Allocation Table and main disk directory. (You will learn more about directories in Chapter 5.) A quick format does not erase the data on the disk because it does not write a format pattern over the entire disk surface and does retain information needed to rebuild the disk. If the old and new disk formats are not compatible, DOS prompts you at the time of formatting to indicate that unformatting will not be possible if you proceed with the format operation. This indicates that DOS will not be able to unformat the disk and you should check carefully to insure that you are formatting the correct disk before proceeding. Adding new files to a formatted disk can prevent old files from being restored with the UNFORMAT command. You will want to use the /j switch, otherwise, you may think files are restored but find that you cannot use them.

If you use the /u switch when you format a disk, DOS replaces every byte of data on the disk with a blank space, thus erasing the information. This is an appropriate approach when you are trying to eliminate confidential data on the disk. UNFORMAT will not work in this case as DOS overwrites the data when it formats the disk. Even though you enter the UNFORMAT command correctly you can see that it cannot always unformat your disk. The ability of the command to do what you want depends on how the formatting was done and whether you have used the disk since it was formatted.

To use the UNFORMAT command:

1. Type **UNFORMAT** at the DOS prompt, press Spacebar, type the letter of the drive containing the disk to be unformatted, insert the disk, then press Enter↵.

   DOS checks the disk for the data it needs to unformat the disk.

2. If DOS locates the file with the information it needs, you can type **Y** to rebuild the disk or **N** to cancel the command.

   DOS will keep you informed of its success or failure as it attempts to rebuild the disk.

   If DOS cannot rebuild the disk, it will display a message telling you that it is not possible.

The section on the UNFORMAT command lists all the switch options that can be used.

UNFORMAT COMMAND SYNTAX

The UNFORMAT command, which is an external DOS command, can restore the files and directory of a disk that has been formatted.

The syntax of the UNFORMAT command is:

drive indicates the drive containing the disk that must be rebuilt.

/l lists the information that the UNFORMAT command can restore.

```
UNFORMAT drive[/j][/l][/test][/p]
```

/j verifies that the mirror files agree with information on the disk. If you think data may have been written to the disk, you should use this switch.

/p prints the command output.

/test displays how the information will be rebuilt.

VOLUME LABELS

During the format command, DOS assigns a volume serial number to the disk and gives you the opportunity to assign a volume label. DOS remembers the serial number of the last disk used in the current drive. It knows when the disks have been switched by comparing serial numbers.

LOOKING AT THE LABEL

There are two ways you can display the volume label and volume serial number. One way is to enter the DIR command. You will learn more about DIR in the next section. This information is then displayed at the beginning of the directory display. Anther way is to enter the VOL command, which is an internal DOS command.

To look at the label of a disk in drive A:

1. Type **VOL A:** and press Enter↵.

ADDING A VOLUME LABEL

If a label was not added during the FORMAT procedure, one can be added using the LABEL command. A label can be up to 11 characters long. It cannot include tabs, control characters (created with the Ctrl key and another key), or the following special characters: * . = ? , / : [ ] \ ; + & ( ) > ‘ |.

To add a label to a disk:

1. Type **LABEL** at the DOS prompt.
2. Press Spacebar and then type the letter of the drive that contains the disk, followed by a colon (:). For example, for drive A, type **a:**
3. Type the label name.
4. Press Enter↵.

USING DIR TO LOOK AT DISKS

Disks are used to store your data or information in units called files. You will learn more about files themselves in Chapter 4, but for now you will want to take a look at a way to check a disk to see if it already contains files. Information about files that you will be interested in includes the file name, size, and date and time created. This information is stored in a directory. Every disk has at least one directory called the main or root directory for the disk. In Chapter 5 you will learn how to setup additional directories on a disk to provide information on files that is better organized.

To look at the contents of a directory, you can use the DIR command. DIR is an internal DOS command. If you do not specify a drive designator or directory, DOS displays the contents of the current directory on the current drive.

To use the DIR command:

1. Set the drive designator to the drive whose contents you want displayed by typing the drive letter followed by a colon (:) and press Enter↵.
2. Type **DIR** and press Enter↵.

Figure 3-6 illustrates a directory listing. The display contains five columns. They are the filename, the filename extension, the size of the file in bytes or characters, the file creation date, and the file creation time. All five columns are used to display information on the files on the disk.

```
          Directory of C:\

MOUSE           <DIR>          06-26-91   12:38p
COMMAND   COM       47845      04-09-91    5:00a
DOS             <DIR>          09-21-91    8:30p
CONFIG    BAK         206      10-14-92    1:10p
AUTOEXEC  BAK         254      10-23-92    9:19a
AUTOEXEC  BAT         154      11-11-91   12:36p
WP51            <DIR>          09-23-91    4:48p
CONFIG    SYS         207      11-11-91   12:37p
HIMEM     SYS       11304      05-01-90    3:00a
PHDF3-6   PIX        1460      11-13-91    3:49p
HSG             <DIR>          11-19-91   11:20a
PHDF3-7   PIX        1878      11-13-91    3:51p
WINDOWS         <DIR>          05-22-91    4:24p
TEMP            <DIR>          05-22-91    5:06p
INSET           <DIR>          08-15-91    4:23p
WPWIN           <DIR>          10-10-92    1:01a
WPC             <DIR>          10-10-92    1:17a
WINA20    386       9349       04-09-91    5:00a
        19 file(s)              72657 bytes
                                9187328 bytes free

C:\>
```

Figure 3-6
The DIR command displays the contents of a specified directory

As you will learn later, disks also contain special entries called directories to better organize the disk. When you look at a directory and see entries for directories, it means that these directories provide a further subdivision for data storage below the current directory. It is somewhat like having a file drawer for a specific type of data, such as the budget, and adding dividers within the drawer for 1992, 1993, and 1994 budget figures. When a directory entry is shown in the display its format differs a little from regular files. The filename extension and file size are replaced by <DIR> in between these two columns. To see the total number of bytes for the files in a directory, specify the drive designator and the directory with the DIR command, as in DIR C:\TEMP.

The end of a directory listing also displays the number of files contained in the directory, the total bytes of storage these files are using, and the number of bytes available.

ADDING PARAMETERS

You can add parameters that allow you to look at files in other locations. You must supply the pathname to inform DOS of the file location. The pathname is the exact location of the file including the drive designator and directory.

To check the directory for another drive

1. Type **DIR**, followed by a space, the letter of the drive, and a colon (:), then press Enter↵.

To check a directory on a different disk and directory:

1. Type **DIR** followed by a space, the drive letter, a colon (:), and the directory path, as in \123 to indicate that you want to look at the 123 directory under the root directory. If the drive is the same as the current drive, you can omit the drive designator.

A number of switches are available with the DIR command. When you enter DIR without any switches, DOS lists all the files line by line in a scrolling fashion, without giving you a chance to read the list.

To have DOS pause after the first screen of information:

1. Type **DIR** , type a space, type the drive designator, as in A:, type a space then type **/P**.

   The box on the DIR command provides a list of DIR switches.

DIR COMMAND SYNTAX

The command syntax for DIR allows you to look at the contents of both floppy disks and hard disks.

The syntax of the DIR command is:

drive is an optional specification used when you want to look at the contents of a drive different from the default drive.

path is an optional path specification used when you want to look at a location other than the default path.

/a displays files with specific attributes indicated by these codes:

d Directories only
h Hidden files only
s System files only
r Read-only files only
q Archived files only

- Prefix used with any code to indicate not.

DIR [drive][path][filename][/p][/w][/a:attributes][/o:sortorder][/s][/b][/l]

filename is an optional specification used when you are looking for a specific filename. You can also use wildcards that allow you to specify a matching pattern for filenames that you want to see.

/o displays filenames in the order specified by these codes:

n Filename
e Extension
g Directories first
s Size
d Date and time

- Used as prefix to reverse the order.

/p pauses after displaying the first screen of information.

/w displays a wide screen of up to five columns of filenames, showing only filenames and file extensions.

/s lists files in the current directory as well as any subdirectories.

/b lists only filenames with each filename on a separate line.

/l displays lowercase rather than uppercase.

USING WILDCARDS TO REFINE THE DIRECTORY LIST

When you enter DIR by itself, DOS lists all the files in the current drive and directory. You can specify a different drive and directory by adding information after DIR. You can specify a specific filename to have DOS check to see if one file is in the directory. Sometimes you might want something between all the files and one specific file. You might want to know if there are any files that match a specific pattern, such as starting with the letter F, or having a filename extension of DOC. You might want a more complicated pattern match, such as having the first three characters as BUD, anything for the next two characters, with the last two characters YR. Wildcard characters offer this pattern matching capability.

Wildcards allow you to look for entries that match a specific pattern. They can save you typing time and allow you to minimize the time you spend reading filenames that are of no interest. You can create a pattern for the filename, the filename extension, or both. Where letters appear in the pattern, there must be exact matches in the filename or extension. You can think of the wildcard characters as functioning like the blank tiles in the game of Scrabble®, where they are used to represent any letter. There are two wildcard characters. The question mark (?) wildcard character is like one blank Scrabble tile. It can represent any letter in the specific position where it is used, as shown in Figure 3-7. In Scrabble you have to state what the blank tile represents as you place the tiles on the board. With DOS that is not necessary, since any letter found in the position will match.

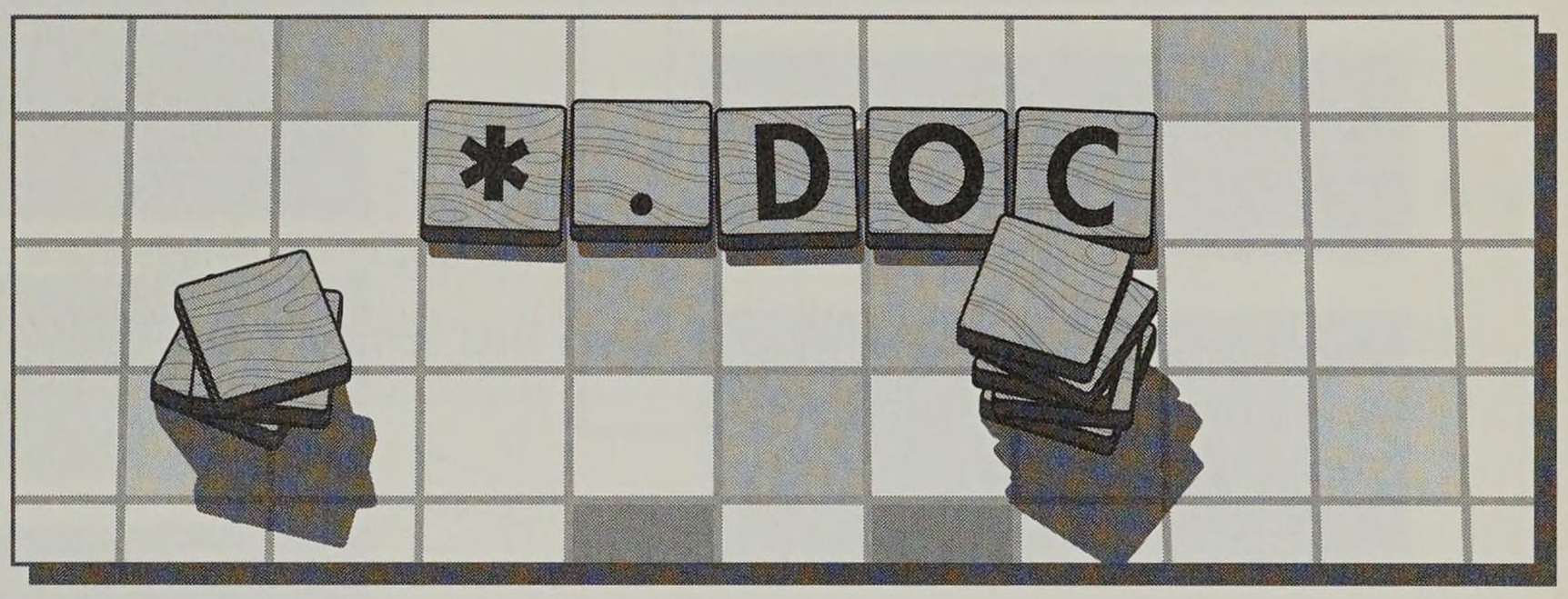


Figure 3-7
The * wildcard

The second wildcard is a an asterisk (*). An asterisk is more flexible since one or more characters can appear in place of the asterisk. Figure 3-8 shows how the only part of the Scrabble word is the first letter. Blank tiles are used for the rest of it. An asterisk is like a stack of blank Scrabble tiles, since it can represent as many as eight characters in a filename and as many as three characters in a filename extension. You can only place it at the end of your pattern for a filename or filename extension.

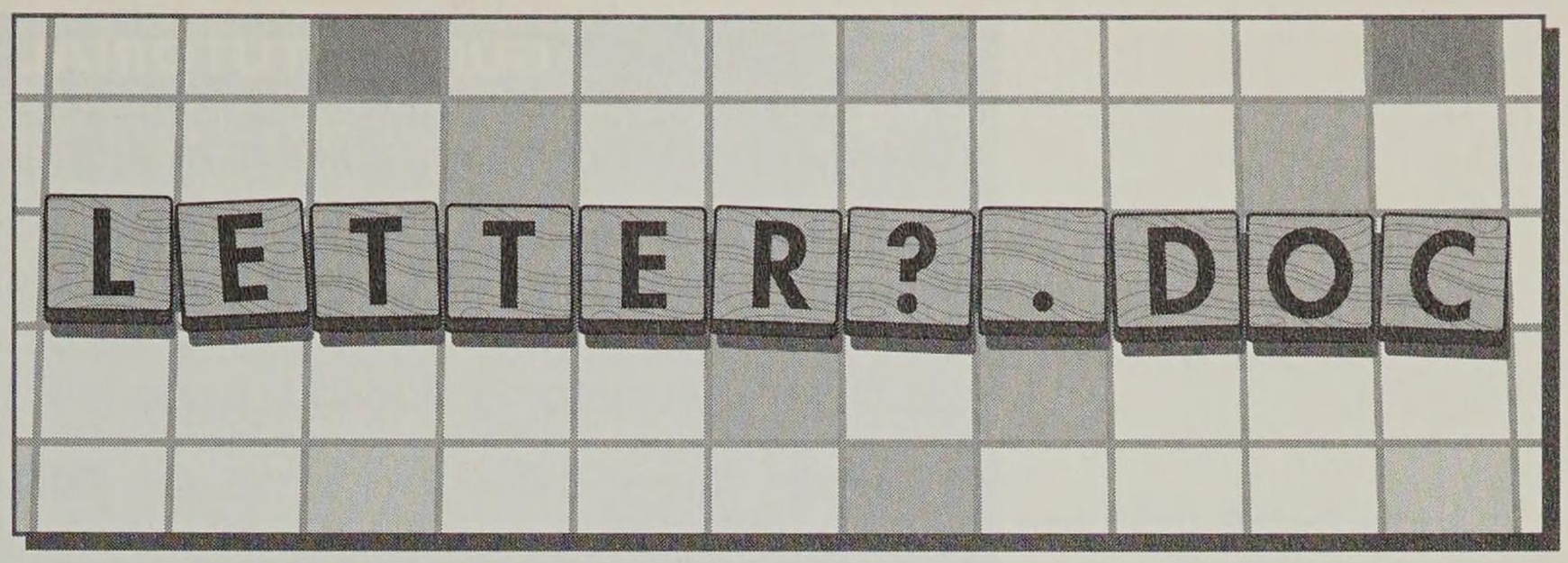


Figure 3-8
The ? wildcard

To use a question mark or asterisk wildcard in a directory listing:

1. Determine which letter in the filename or extension that you want to match with any character.
2. Type **DIR** followed by a space, and the pattern you create, and then press Enter↵.

When you want to see if there is a file named BUDGET93 in the current directory, you can type DIR BUDGET93 and press Enter↵. Statistics about the file display if it is located. The wildcard character ? can be used to represent a single character at any location in a filename such as in DIR ??????93. A filename with any six characters followed by 93 match this entry and their directory entry will display. This means that you would see BUDGET93, LETTER93, PAYROL93, and so on. You can use an asterisk as a substitute for any number of characters at the end of an entry. Use DIR B*.* to locate file whose names begin with B regardless of the rest of the filename and the filename extension.

GUIDED TUTORIAL 3-7

Sometimes you will be working on your system and want to look at a drive other than the current drive. It is common to be working on drive C and want to check the contents of a disk in drive A. If drive C is the current drive and you want to display the contents of a floppy disk in drive A, you would:

STEP 1 Place the disk you want to look at in drive A .

STEP 2 Type **DIR A:** and press Enter↵.

The indicator light of the disk drive flashes as DOS accesses the disk in drive A. The contents of the disk are then displayed on your screen. *.* is implied as the filename and filename extension when you leave these entries blank. The current drive still remains at drive C, however.

GUIDED TUTORIAL 3-8

Often you will find it more efficient to organize your directory display to make it easier to find the files or directories you are looking for The/w switch will display files using the wide format. The /O:GN switch will display them in alphabetical orde with directories appearing first and filenames following. To do this, you would :

STEP 1 From the C: prompt, type **DIR/W/O:GN** and press Enter↵.

The screen below shows what this display might look like. This format displays up to five filenames across the screen and shows only the filenames and filename extensions. Directories appear in alphabetical order before the filenames, which are also in alphabetical order.

```
Volume in drive C has no label
Volume Serial Number is 0F5B-16FA
Directory of C:\

[BAT]           [DOS]          [MOUSE]         [OLD_DOS.1]     [PNTACK]
[QEMM]          [WINDOWS]      [WORD55]        AUTOEXEC.OLD    AUTOEXEC.BAK
AUTOEXEC.QDK    AUTOEXEC.BAT   COMMAND.COM     CONFIG.OLD      CONFIG.3
WINA20.386      CONFIG.QDK     CONFIG.SYS      LDASETUP.COM    OPT3.BAT

               21 file(s)          74316    bytes
                                19974144    bytes free

C:\>
```

You might remember that a file on the Student disk that you are looking for has a filename that started with T but you might not remember the complete entry. Rather than display all the files on the disk, you can limit what you need to read. To display a list of all the files on your Student disk that begin with the letter T :

STEP 2 Place your Student disk in drive A.

STEP 3 Type **DIR A:T*** and press Enter↵.

On another occasion you might want to see all of your Student disk files with a .BAT extension. To display a list of all the files on your Student disk that have a filename extension of .BAT:

STEP 4 Type **DIR A:*.BAT** and press Enter↵.

You can look at the current directory as well as all files that might appear below it with the /s switch. This is useful if you know a file is on a disk but are uncertain which directory you have stored it in. To display a list of all the files in the root directory of your hard disk, as well as files in lower directories, pausing after each screen:

STEP 5 Type **DIR C:*.* /s /p** and press Enter↵.

ON YOUR OWN EXERCISES

1. Insert your Student disk in drive A, and display the contents of the disk, pausing after the first screen is full. Continue with the remainder of the display. Use Print Screen to show the last screen of output.

2. Turn on the Continuous Print Screen feature (Ctrl-PrtScr) until you finish your last exercise. Display the contents of your Student disk using the wide format display.

3. Display the contents of your Student disk in alphabetical order by filename extension.

4 Display the names of all files on your Student disk that start with a "j".

5. Display the names of all files on your student disk with .ASC as a filename extension.

USING CHKDSK

The CHKDSK command is used to check the status of a disk and display the results on the screen. It is an external DOS command that checks the file allocation table and file system for any logical errors. For instance, two or more files may be using the same allocation unit. There may be allocation units that are not marked as available for storing data but do not have directory entries that identify them. Some of these errors may be correctable with the /f switch.

CHKDSK PARAMETERS

To use the CHKDSK command:

1. Set the drive designator to the drive whose status you want to check.
2. Type **CHKDSK** and press Enter↵.

After you press Enter↵, DOS displays a screen of information about the disk you specified. Figure 3-9 illustrates the results from the CHKDSK command.

```
C:\>chkdsk
Volume Serial Number is 16FD-7D-7

  33454000  bytes   total disk space
     73728  bytes   in 2 hidden files
     47104  bytes   in 18 directories
  24111104  bytes   in 733 user files
     36864  bytes   in bad sectors
   9185280  bytes   available on disk

      2048  bytes   in each allocation unit
     16335  total   allocation units on disk
      4485  available allocation units on disk

    655360  total   bytes memory
    485072  bytes   free

C:\>
```

Figure 3-11
CHKDSK results

The CHKDSK command displays information about the total amount of disk space, space used and available, and file statistics.

There are two CHKDSK switches. The /f switch fixes errors on the disk such as disk space not used by files but included in the allocation table for the disk, space used by files not included in the allocation table, multiple files using the same allocation units, and file sizes on the disk that do not match the file sizes in the allocation table for the disk. The /v switch displays the files on the disk at the beginning of the CHKDSK display.

CHKDSK COMMAND SYNTAX

The external CHKDSK command allows you to check and fix the status of a disk and the amount of RAM memory available in your computer.

The syntax of the CHKDSK command is:

pathname is the location for the drive or file to be checked for logical errors.

/v displays the names of files as they are checked for logical error.

CHKDSK [pathname][/f][/v]

/f fixes logical disk errors.

GUIDED TUTORIAL 3-9

If you are having a problem reading files from your Student disk, you might want to check its status:

STEP 1 Place your Student disk in drive A.

STEP 2 Type **CHKDSK A:** and press Enter↵.

Your display should look something like Figure 3-9. You may have a different amount of memory on your machine, but the information about the disk itself should match what you see in the figure. If it does not, you may have damaged the disk or accidentally written other data on the disk.

GUIDED TUTORIAL 3-10

You might want to run CHKDSK on your hard disk to see how much space is left on the disk. When you run CHKDSK on several hard disks, the results are likely to differ slightly as the files on each system are different. With the C drive active if you have one, use the CHKDSK command to see how much available space is on the disk:

STEP 1 Type **CHKDSK** and press Enter↵.

GUIDED TUTORIAL 3-11

You can check for logical errors on your hard disk as you check the disk.

STEP 1 Type **CHKDSK /f** and press Enter↵.

ON YOUR OWN EXERCISES

1. Format a new disk, then use CHKDSK to verify that all of the disk is available for data storage.

2. Use CHKDSK and check for logical errors, displaying the names of files that cause the error.

USING DISKCOPY

The DISKCOPY command is used to copy the contents of one floppy disk to another floppy disk. The process is just like making copies of a master document that you want to distribute to several people. If you have a sophisticated copy machine you can lay the master in one side and collated and stapled copies will be produced automatically once you press the right buttons. The DISKCOPY command is the sophisticated copier for disks since one command can make an exact duplicate of a disk. The disk you are copying from is called the source disk, and the disk you are copying to is called the target or destination disk. If the target disk contains data, it is destroyed as the new information is copied. DISKCOPY automatically formats the target disk if necessary before copying information. During the copy operation, DISKCOPY creates a new volume serial number for the target disk and displays it when the operation is completed.

You can only use DISKCOPY when the size and density of the disks are the same. You cannot use DISKCOPY to copy from the hard disk to drive A. You cannot use DISKCOPY to make a copy of a 5¼-inch disk on a 3½-inch disk.

To use the DISKCOPY command:

1. Type **DISKCOPY** and then press Spacebar.
2. Type the letter of the drive that contains the source disk followed by (:) and then press Spacebar.
3. Type the letter of the drive that contains the target disk followed by (:) and then press Enter↵.

After you have copied a disk, the DISKCOPY command displays the following message:

```
Copy another diskette (Y/N)?
```

If you enter **Y**, follow the prompts to continue the operation for another disk. If you enter **N**, you exit the procedure.

If your system has only one disk drive (the source and target drives are the same letter, drive A, for example), you will need to swap disks when DOS prompts.

OPTIONS

The DISKCOPY command has two switches. The /1 switch copies only the first side of a disk. The /v switch instructs DOS to verify the information being copied. Therefore, the command takes longer to execute since the data is read a second time and compared to the original data on the original disk. The target disk has a different volume label and a new volume serial number assigned by DOS during the copy operation.

POTENTIAL PROBLEMS

You may have a problem if you want to copy one size disk to the same size, and you have only one disk drive that accommodates that size. To avoid this problem, use DISKCOPY A: A:. The computer prompts you to change disks by indicating when to put the Source disk in drive A and when to put the Target disk in drive A.

The DISKCOPY command can be used only for copying information between floppy disks. It cannot be used with a hard disk. If you specify a hard drive for either the source or target drive, as in:

C>DISKCOPY C: A:

DOS displays the following error message:

```
Invalid drive specification
Specified drive does not exist
or is non-removable
```

If your attempt to copy information was unsuccessful because of an incompatible error message, you can retry the operation by specifying the same drive for the source and target disks. DOS displays an error message when the target disk is write-protected. You need to unprotect it either by removing the sticker that covers the notch in the right side of a 5¼-inch disk, or by moving the plastic tab to cover the hole in the upper right portion of a 3½-inch disk. If the target disk is bad, the procedure will not continue, and you need to use another disk. If the source disk is bad, copy as much of the information as possible to another disk using the COPY *.* command shown in Chapter 6 on page 125.

DISKCOPY COMMAND SYNTAX

The external DISKCOPY command copies a disk to another disk to make the two disks identical.

The syntax of the DISKCOPY command is:

drive1 specifies the source drive if you do not want to use the default drive.

/1 copies only the first side of the disk.

```
DISKCOPY [drive1][drive2][/1][/v]
```

drive2 specifies the target drive if you do not want to use the default drive.

/v verifies that the disk is copied correctly.

GUIDED TUTORIAL 3-12

You want to make a complete copy of your Student disk in case the original is damaged. You might actually want to store the original in a safe place and use the copy. To make a working copy:

STEP 1 Type **DISKCOPY A: A:** and press Enter↵.

STEP 2 Place the source disk to be copied in drive A.

STEP 3 When prompted, change the disk to the target disk.

STEP 4 Repeat steps 3 and 4 as directed.

STEP 5 Type an **N** to indicate that you do not want to copy additional disks.

The original disk should be stored in a safe place since it may be needed to make replacement working copies in the future.

GUIDED TUTORIAL 3-13

You need to send information on your disk to a classmate who is out of town. Your system has only one disk drive. To make a copy of your disk:

STEP 1 Type **DISKCOPY A: A:**.

DOS prompts you to insert the source disk in drive A.

STEP 2 Place the disk to be copied in drive A, and then press Enter↵.

When DOS has finished copying the data from drive A into memory, it prompts you to insert the target disk in drive A.

STEP 3 Place a blank disk in drive A after removing the original disk, and then press Enter↵.

The DISKCOPY command then copies the data in memory to the target disk in drive A. You may need to repeat steps 2 and 3 in response to DOS prompts depending on the amount of data on the disk and the amount of memory in your system.

STEP 4 When you are finished, type an **N** to stop making copies.

ON YOUR OWN EXERCISES

1. Using the DISKCOPY command, copy the contents from your Student disk to a Work disk. Use the DIR command to check the data copied to your Work disk.

2. Copy the contents of one of your Work disks to another disk, but instruct DOS to verify the data being copied.

USING DISKCOMP

The DISKCOMP command, which is an external DOS command, allows you to compare the contents of two floppy disks that you think contain the same information. This is much faster and more accurate than using the DIR command on each disk. DISKCOMP checks if both disks contain the same disk directories, the same files, and the same data in these files by comparing them track by track. The number of sides and sectors per track of the first disk must be the same for the target disk. Therefore, when you are comparing disks in different disk drives, they must be compatible. If they are not, DISKCOMP displays the message:

```
Drive types or diskette types not compatible
```

To use DISKCOMP to compare two disks using drive A:

1. Type **DISKCOMP A: A:** and press Enter↵.
2. Replace the source disk with the target disk when prompted.

   A successful compare operation displays the message:

```
Compare OK
```

   When the procedure is completed, DISKCOMP displays the message:

```
Compare another diskette (Y/N)?
```

3. Type **Y** to continue the procedure to compare another disk. Type **N** to exit the procedure.

An advanced procedure for DISKCOMP is available where you can obtain a list of exit codes returned by this command. It is obtained through the use of a batch program. Table 3-2 lists the possible codes returned by DISKCOMP.

Table 3-2 DISKCOMP exit codes

CODE	DESCRIPTION
0	Disks are the same.
1	Differences were found.
2	Ctrl-C was pressed to halt the procedure.
3	A hard error occurred.
4	An initialization error occurred.

DISKCOMP COMMAND SYNTAX

The external DISKCOMP command allows you to compare two different disks to ensure that they are identical.

The syntax of the DISKCOMP command is:

drive1 specifies the first disk if it is not in the default drive.

/1 compares only the first side of the two disks.

DISKCOMP [drive1][drive2][/1][/8]

drive2 specifies the second disk if it is not in the default drive.

/8 compares only the first eight sectors of the two disks.

GUIDED TUTORIAL 3-14

When you are going to send someone a copy of your disk, you want to insure that it has been copied correctly before spending money to mail it. You might want to send a copy of your Student disk to your brother to let him take a look at the kind of data you have been using with DOS. You can copy the disk, then use DISKCOMP to insure that it copied correctly.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **DISKCOPY A: A:** press Enter↵.

STEP 3 When prompted for the target disk, place the blank disk in drive A and press Enter↵.

If the disk has not been formatted, this procedure will be completed before copying the data.

STEP 4 Continue placing the appropriate disks in the drive until the copy is complete.

STEP 5 Place the Student disk back in drive A.

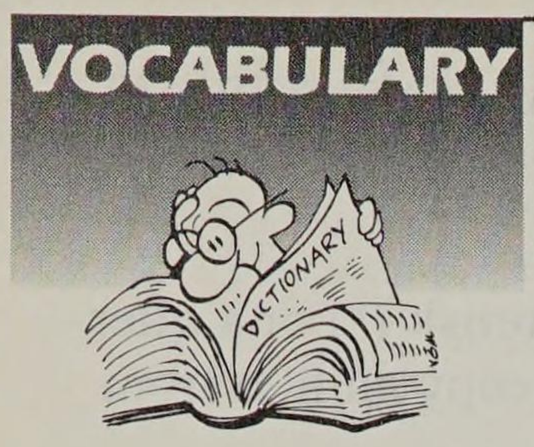
STEP 6 Type **DISKCOMP A: A:** and press Enter↵.

STEP 7 Place the disk copy in drive A when prompted for the second disk and continue to respond to prompts to place disks in the drive.

ON YOUR OWN EXERCISES

1. Check side 1 of your student disk against a blank disk. How many errors were reported?

2. Compare your student disk to a blank disk. How many errors are displayed before it stops checking?



Directory
A logical way of organizing data on the disk. A directory is actually a special type of file that contains data about other files stored on the disk.

Drive designator
A letter representing one of the drives that are part of your system. Floppy drives are typically called drive A and B and hard drives are often called drive C. When used in commands, drive designators are followed by a colon.

File Allocation Table (FAT)
Tracks the location of each file on the disk. The FAT is created during the FORMAT procedure.

Format
The process by which DOS clears any files that may exist on a disk and then directs DOS where it can store data on the disk by dividing it into sectors and creating a tracking system. This process must be done before using a disk for the first time.

Mirror file
A file created during the FORMAT procedure that contains the files that were last on that disk before the command was performed. They can be recovered before new information is written to the disk.

Path
The location of a file including the drive designator and directory name where it is located.

Source
The location from which you copy data, such as a floppy disk.

Switch
An option that makes a DOS command perform differently.

Target
The destination of the source data when you copy it from one location to another, usually another floppy disk.

Track
One of many concentric circles that indicate where data can be placed on a disk. They are created by the operating system during the formatting procedure.

Unformat
A procedure that allows you to restore a disk to its original condition before the FORMAT command was performed.

Volume label
An optional name you can assign to a disk that can be up to 11 characters long. Certain characters are not permitted in the name.

Volume serial number
A unique number that DOS assigns to a disk during the FORMAT procedure.

Wildcard
A way to designate some or all files using an asterisk (*) or a question mark (?). For example, COPY A:*.* C: will copy all files from the A drive to the C drive.

WHAT YOU LEARNED

In this chapter you learned how to handle many disk tasks. Some of the things you learned include the following:

- What types of disks are available and their storage capacities.
- How to format a disk to prepare it for data storage.
- How to unformat a disk.
- How to write protect a disk.
- How to add a volume label to a disk.
- How to display the contents or status of a disk.
- How to copy an entire disk.
- How to compare two disks.

REVIEW QUESTIONS

Answer each of the following with *true* or *false*.

_____ **1.** You can use the DISKCOMP command to make a copy of an entire disk.

_____ **2.** Only hard disks can have volume labels.

_____ **3.** Using the /s switch with the FORMAT command adds system files to the newly formatted disk.

_____ **4.** The DIR command can be used with the /p switch to print a copy of the directory.

_____ **5.** CHKDSK is used to prepare a disk for data storage.

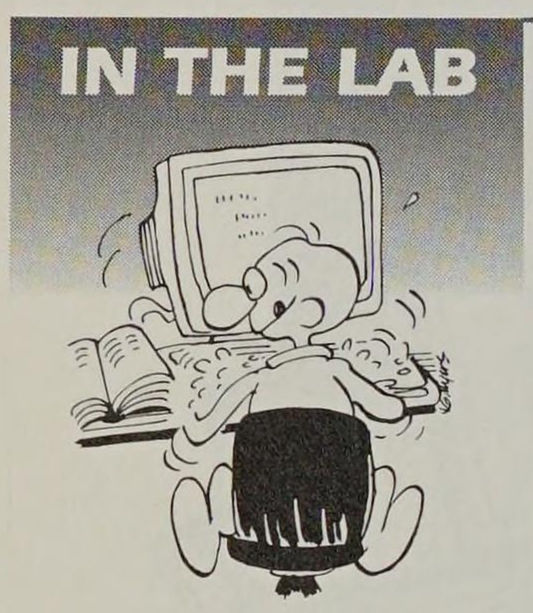
_____ **6.** A 3½-inch high density disk can hold more data than a 5¼-inch high density disk.

_____ **7.** Disks can be formatted as single sided, double sided, and high density if the drive and disk support the option selected.

_____ **8.** The UNFORMAT command will format a disk that is universally accepted in all disk drives.

_____ **9.** A MB is used to measure the density with which data is stored on the disk.

_____ **10.** Wildcards can be used to establish a matching pattern for filenames.



For this exercise, you will need a Work disk that contains old files or an empty Work disk that you copy a few files to.

1. Format your work disk. Using your formatted disk, recover the files that the disk contained before you formatted it.

2. Add the operating system to a formatted disk.

3. Add a volume label to a Work disk that does not contain one, or change the name of an existing label.

4. Check the status of a Work disk that contains data files for:

- **a.** Volume serial number and volume label.
- **b.** Bytes of total disk space.
- **c.** Number of hidden files.
- **d.** Bytes available on disk.
- **e.** Total bytes of memory.
- **f.** Number of bytes free.

Write down the results that you get.

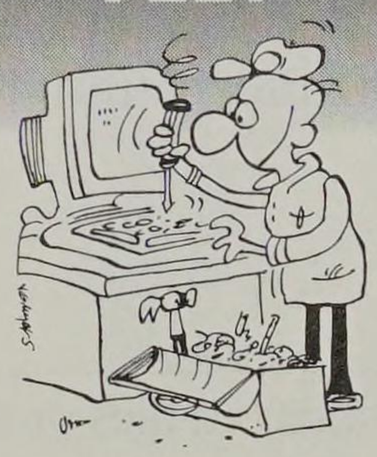
5. Display the contents of your hard disk. Find all the information that you found on the Work disk for the hard disk.

6. Display the contents of your Student disk using the wide format.

7. Display the contents of your Student disk, but instruct DOS to pause after the first screen of information.

8. Perform a DISKCOPY of your Student disk to a blank Work disk. Then compare the two disks.

THINKING ON YOUR FEET



You have not been as careful as you should be in applying external labels to your disks. You have a stack of disks and need to locate the disk that contains the file MYWORK.DOC as quickly as possible. Once you locate it, you would like to make a copy of this disk using an unformatted disk. What procedure would you follow to accomplish this task as quickly as possible?

CHAPTER 4

CREATING AND DISPLAYING FILES

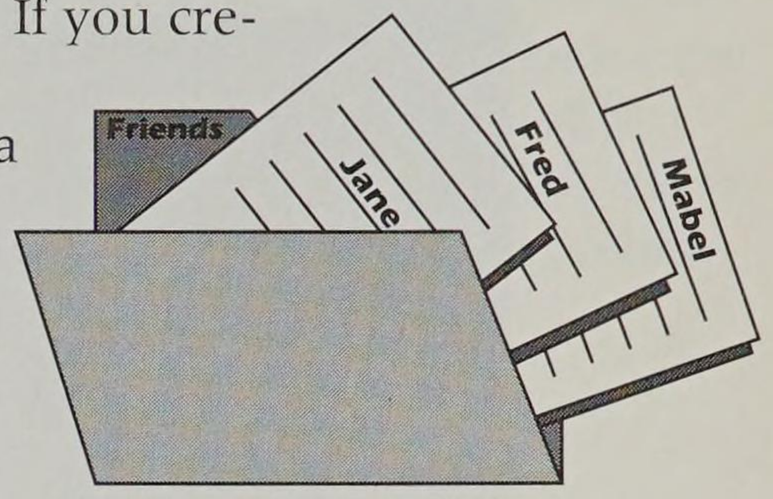
After completing this chapter, you will be able to:

- Explain what a file is.
- Define valid DOS filenames.
- Differentiate between different file types.
- Create a text file.
- Display the contents of a text file on your screen or printer.

OVERVIEW

Files are organized units of data stored on disks. They are essential to your use of the computer because they store information such as programs, data, and specifications. If you were to type all the names and addresses of your friends at the computer, initially they would be placed in the computer's memory. If you turned the computer off after typing them, they would not be there any more. Since you want to keep what you type, you store it in a file on disk so that it can be retrieved again.

Typically, all the information in a file is related in the same way that pages in a book or papers in a file folder are related. You would place the names of your friends in one file. If you create a budget with the computer, you would use another file. If you wrote a term paper for your history class, it would be placed in a third file. It is your responsibility to give each file a unique name to allow DOS to keep them separately for you.



Most of the files that you create will be the data files that contain your information. These files can contain text in a format that is displayable and printable directly through DOS. Data files can also have a format unique to the program that was used to create them. These special data files often have non-printable and non-displayable characters that may prevent your accessing them with any program other than the program that was used to create them.

DOS FILENAMES

Since DOS must be in memory to run any program on your computer, DOS makes the rules for acceptable filenames no matter which program you are working with. Once you master the DOs and DON'Ts of creating DOS filenames, you will be able to create files from DOS or any other program with the same rules.

The name you give a file is the "handle" that you use to access that file later on. Not only do you want your filenames to conform to DOS rules, you also want to ensure that your filename is meaningful. You want to use the same pattern for filenames when assigning names to files containing the same type of data. For example, if you create files containing budget data for 1991, 1992, and 1993, the filenames BUDG91, BUDG92, and BUDG93 are better choices than BUDG91, 92BUDG, and BUDGET93.

NOTE: It is a good idea to create a list of naming rules to use with all of your files. Post this list on the wall next to your computer so that it is readily available each time you create a new file.

Each file in a given location must have a unique filename. You can reuse a filename only when the two files are on different disks or in different directories.

A filename can have two distinct parts. One is the actual name of the file, and the second is an extension, which is separated from the filename by a period (.). Filename extensions are never required when you create a file with DOS. Some programs automatically add an extension to your filenames when you save data. You will need to specify this filename when you attempt to access the file with DOS. The filename can have up to eight characters. Think of it as having eight blank tiles that you can use to create the filename. You can use one tile with any letter or number you want on it, all eight tiles, or some number in between one and eight. If the filename has an extension, a period must follow the filename as a separator. The filename extension can contain up to three characters. This means that you have another three blank tiles that you can use for an extension if you want. Figure 4-1 shows the tiles with the letters FILENAME.EXT to represent what they contain.

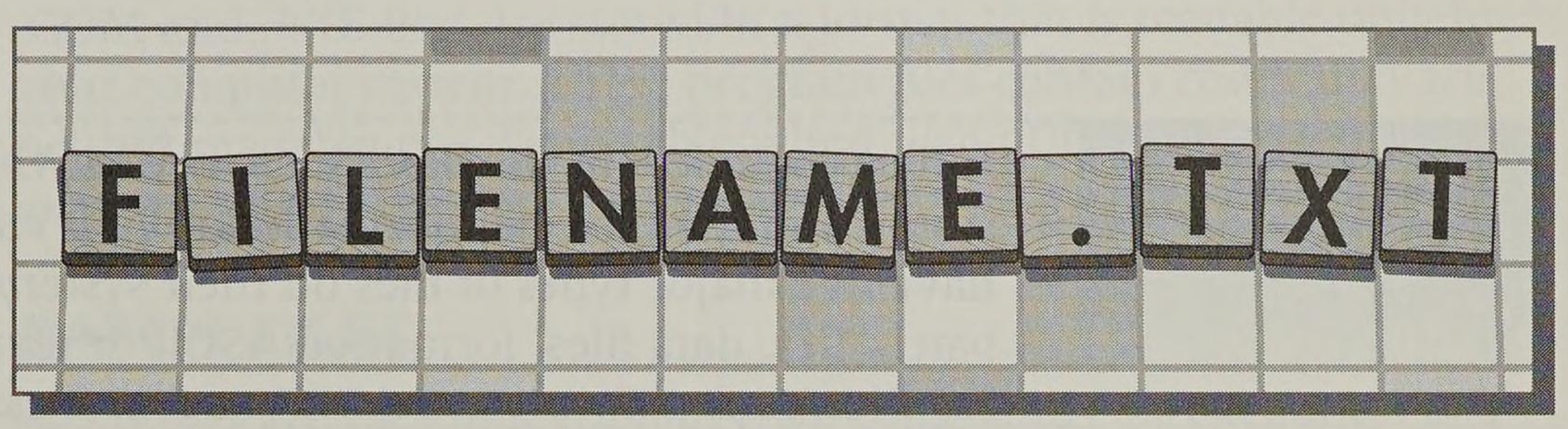


Figure 4-1
Filename conventions

You must abide by the following rules when you name files.

RULES FOR FILENAMES

- Filenames cannot exceed eight characters.
- Filenames should never contain the following characters: + = / | ; : * , ? > \ [ ] ".
- Filenames should not include spaces, DOS device names such as CON and PRN, or other DOS reserved words such as the names of commands.
- Filenames can use other special symbols, numeric digits, and letters in uppercase or lowercase.

If you cannot find a file that should be on a disk, you will want to consult the section on wildcards in Chapter 3 to learn a technique for locating a file with a matching name regardless of the extension. You may also want to consider the location where you stored the file. To access a file you must tell DOS the path to find it. The path

may consist of nothing more than the filename if the file is on the current drive in the current directory location. If the file is not in the current location, the path will consist of the drive or directory or both, in addition to the filename.

Table 4-1 shows some examples of valid and invalid filenames.

VALID FILENAMES	INVALID FILENAMES
JOHNSON	JIMJOHNSON
LETTERS	?'?'@#
JACOBS	JACOBS.JOHN
MEMO.TXT	MEMO.TEXT
HARRIS.R1	HARRIS.R1.2
DEC_TOT	DECEMBER.TOTAL

Table 4-1 Valid and invalid filenames

FILE TYPES

A file type refers to the basic structure in which information is stored and the type of information that it contains. Almost all users have five major types of files on their systems: program files, DOS batch files, data files, formatted ASCII or text files or word processing files, and unformatted ASCII or text files.

FILENAME EXTENSION	TYPE OF FILE
.ASC	ASCII text (unformatted)
.BAK	Backup file
.BAT	DOS batch file
.COM	DOS program file
.DOC	Word processing document file
.EXE	Executable program file
.MSG	Message file
.PCX	Graphic image file supported by PC Paintbrush
.SYS	System file
.TXT	Text file
.$$$	Temporary file

Table 4-2 Information contained in various file types

PROGRAM FILES

Program files can contain DOS commands or the routines needed to make other application software work properly. Program files are executable, that is, they make your computer perform or execute a specific set of tasks. For example, you will use DOS commands to prepare a disk for storage or to print a copy of a text file. You might use other types of programs such as word processors for typing memos and letters, spreadsheets for creating budgets, or graphic presentation packages for creating charts.

DOS programs are special system programs referred to as commands. DOS commands are either stored in memory or on disk. Commands stored in memory are executed as soon as you type the command. When you use commands stored on disk, there is a short delay as DOS reads the program or file that it needs from the disk to fulfill your request. Program files have either an .EXE or a .COM extension. External DOS commands and other command files always have a .COM extension, standing for *command*. Application programs will have an .EXE extension, standing for *executable*.

.COM and .EXE files are stored in a format that is readable only by your computer system. These program files contain codes that are neither readable nor displayable when using DOS commands that can look at text files.

BATCH FILES

Batch files are files that contain DOS commands for execution at a later time. The entries in a batch file are stored as a text file, and are an exact duplicate of entries made at the DOS prompt. Batch file entries direct your computer to execute DOS tasks using the stored DOS commands rather than requiring you to type each command again at the DOS prompt.

You can create batch files with EDLIN, the DOS text editor, or your favorite word processing program. All batch files must have a filename extension of .BAT if you want DOS to be able to execute the commands stored in the file.

Although batch files are actually text files, they require a separate listing. Batch files are unique in that they contain only DOS commands, and must have the .BAT filename extension.

TEXT FILES

Text files are files that contain characters corresponding to the letters, numbers, and symbols on your keyboard. An unformatted text file contains no other characters and can be displayed or printed with DOS. The term *unformatted* should not be confused with the for-

matting and unformatting of disks discussed in Chapter 3. Disk formatting affects the media you are using for storage (disk) whereas a formatted file refers to the data with a specific file. You will notice that unformatted files are not empty like an unformatted disk.

An unformatted text file is often called an ASCII file since the file contains only the standard characters defined by the ASCII codes. ASCII codes are nothing more than a set of standard codes for each character. ASCII stands for American Standard Code for Information Interchange. A formatted text file has additional codes within the file that are used to format the file for printing with the program that you used to create the file.

Creating Unformatted Text Files

You can create unformatted text files in a number of ways. You can use the COPY command, or the DOS Editor or EDLIN programs supplied with DOS. The best option usually is to use a word processor program such as WordPerfect® or Microsoft® Word to create unformatted text files. Word processing programs are typically used to create letters and reports that are formatted to look good, but they can also create files that contain nothing but text. You must be careful when using a word processor because most require a special procedure for creating an unformatted text file; the default setting produces a formatted text file containing all the word processing codes. You can also create text files by printing data from almost any program to a file instead of the printer. See "The Inside Scoop on Creating Unformatted Text Files" to learn how to create unformatted text files with two popular programs. If you do not have these other programs, you can use DOS to create and change you text files as mentioned above.

THE INSIDE SCOOP ON CREATING UNFORMATTED TEXT FILES

Lotus® 1-2-3® is a popular program used to create budgets and other financial projections. If you happen to have a copy of it you can use it to create text files. To create an unformatted text file from a Lotus 1-2-3 worksheet, press **/**, *then select* **Print**, *then* **File**. *Then enter the filename and press* Enter↵.

WordPerfect® is one of the most popular word processing programs used to create typed documents of all types. Like 1-2-3, WordPerfect can be used to create text files. To create an unformatted text file with WordPerfect, start with a new document file, and type the text you want in the file. Press Ctrl-F5 *(Text In/Out) when you are ready to save your entries. Select* **Save file**, *type a filename, and press* Enter↵.

With WordPerfect you cannot use F7 *(Exit) and* ⇧Shift-F10 *(Save) when you want to save a file in an unformatted text format. These two options save your file with WordPerfect codes in the file.*

Creating Formatted Text Files

You can create formatted text files with any word processing program. As you type your text, the word processing program adds special codes to indicate tabs, margin settings, spacing, justification on the page, and other formatting features. Almost all word processing programs hide these codes from view to allow you to focus on the content of your message.

DATA FILES

There are as many possible formats for data files as there are applications. The many options allow each software developer to create a unique, proprietary format. Fortunately, the popularity of some formats has led them to become industry standards, and many programs support these standards. Lotus 1-2-3's .WK1 files and dBASE's .DBF files are two popular formats supported by many different applications.

Application data files always contain codes that prevent you from accurately viewing them using DOS. You can, of course, view them with the application as well as with some file utilities that provide a viewer to look inside various types of files. Table 4-3 shows how you can use a file's filename extension to determine which program's format the file is in. You can then use that program or a viewer to look at the file more closely.

FILENAME EXTENSION	TYPE OF FILE
.ASC	ASCII text file
.BAK	Backup file
.BAT	DOS batch file
.COM	DOS program file
.DOC	Microsoft® Word document file
.DBF	dBASE® database file
.EXE	Application program file
.PCX	Graphic File supported by PC Paintbrush®
.PRN	Text file created with 1-2-3
.SYS	System file
.TXT	Text file
.WK1, .WKS, or .WK3	Worksheet created with Lotus® 1-2-3

Table 4-3 Common filename extensions

GUIDED TUTORIAL 4-1

You should always strive to use a consistent pattern for naming files. You will also need to keep in mind the various DOS rules as you evaluate filenames. It is a good idea to jot down several options on paper and evaluate each as you make your decision. Some will be eliminated as you check their validity.

If you need to name files that contain sales figures for 1991 through 1994, you might follow this procedure:

STEP 1 Write down the following ideas for filenames:

SALESNN where NN is a two digit year number
SALESNNNN where NNN is a four digit year number
NNNNSALES where NNNN is a four digit year number
NNSALES where NN is a two digit year number
SALES1, SALES 2, SALES 3, SALES4
SALEFIGA, SALEFIGB, SALEFIGC

STEP 2 Evaluate each option, rejecting the second and third choice because they have nine characters.

STEP 3 Continue your evaluation, selecting the option that conveys the most meaning. The last two options would be rejected on this basis, leaving only SALESNN and NNSALES. SALESNN is the better choice since it states the type of data followed by the year. This would result in the following filenames:

SALES91
SALES92
SALES93
SALES94

GUIDED TUTORIAL 4-2

If asked what filename extension to use for text files and batch files, you could follow these steps:

STEP 1 Turn to page 78 and scan through the file types on the left of Table 4-2.

STEP 2 Choose .TXT for text files and .BAT for batch files.

GUIDED TUTORIAL 4-3

Often you will want to check to see if a specific type of file is on a disk. You might be wondering if the disk contains any programs or if there are any batch files. To check your Student disk to see if it contains any batch files, follow these steps:

STEP 1 Place the Student disk in drive A.

STEP 2 Type **DIR a:*.BAT** and press Enter↵.

You should get the following results:

```
Directory of A:\

123      BAT      106      10-17-91      11:50a
P        BAT      110      10-17-91      11:53a
WP       BAT      111      10-16-91       5:57p
       3 file(s)                327 bytes
                            1395712 bytes free
```

ON YOUR OWN EXERCISES

1. Match the following filename extensions and file types:

.BAK	ASCII text file
.SYS	Backup file
.DOC	DOS batch file
.ASC	DOS program file
.PCX	Microsoft® Word document file
.PRN	dBASE® database file
.EXE	Application file
.BAT	Graphic File supported by PC Paintbrush®
.DBF	Text file created with Lotus® 1-2-3®
.COM	System file
.WK1	Text file
.TXT	Worksheet created with Lotus® 1-2-3®

2. List all the files with an extension of .TXT on your Student disk.

USING COPY TO CREATE A FILE

DOS has an internal COPY command that is normally used to make duplicate copies of files on your disk. We discuss the details of this command in Chapter 6. For now, though, you are interested in one special option that COPY provides. You can use COPY to copy keystrokes that you type at your console (keyboard and monitor) to a disk file. To use the command in this way, you need to use a device

name in the command. A device name is the special name that DOS uses to refer to one of your computer's components. Figure 4-2 shows how you can use COPY CON to create a text file. CON is the device name used for the console. Later in this book you also learn to use the DOS Editor to create a text file.

The basic procedure for copying text to a file with COPY CON is:

1. Type **COPY CON** followed by the name of the text file where you will store the entries.
2. Type each line of text you want in the file, pressing Enter↵ at the end of each line.
3. Press Ctrl-Z or F6 and then press Enter↵.

```
C:\>copy con keepthis.txt
DOS waits for you to type text
Each time you press Enter at the end of a line, a line is created for the file
When you finish making text entries you need to tell DOS you are finished
You can do this by pressing F6 or Ctrl+z
When you press Enter DOS complete the file
DOS displays a message indicating that 1 file has been copied
^Z
        1 file(s) copied
C:\>
```

Figure 4-2
Using Copy CON to Create a Text File

COPY CON COMMAND SYNTAX

The syntax of your entry would be:

filename is the name of any valid file.

COPY CON filename

GUIDED TUTORIAL 4-4

If drive C is the current drive and you want to copy to TEXT on drive A, follow these steps.

STEP 1 Place your Work disk in drive A.

STEP 2 Type **COPY CON A:TEXT** and press Enter↵.

After you type this command and press Enter↵, the DOS prompt does not reappear since DOS is waiting for you to enter a line of text that it can store in this file.

STEP 3 Type **Thirty days hath September, April, June, and November**, then press Enter↵.

Before pressing Enter↵, look carefully at the line, and make any needed corrections. Once you finalize the line by pressing Enter↵, you cannot make corrections other than ending the operation and starting all over.

STEP 4 Type **All the rest have thirty-one except February** and press Enter↵.

STEP 5 Press F6 or Ctrl-Z and then press Enter↵.

After pressing Enter↵ to finalize the last line to copy to the text file, you need to tell DOS that you have finished. The F6 or Ctrl-Z keys have DOS generate ^Z on the last line. DOS tells you the copy operation is done by displaying a message that one file was copied.

GUIDED TUTORIAL 4-5

You can create the text file GRADES.TXT on your current drive and enter your classes and projected grades.

STEP 1 Place your work disk in drive A and type **A:** to make drive A the current drive.

STEP 2 Type **COPY CON GRADES.TXT** and then press Enter↵.

STEP 3 Next, type each of the following lines, and press Enter↵ after each:

HISTORY 95
ENGLISH 80
FRENCH 92
MATH 93
FINANCE 88

STEP 4 Press F6 and then press Enter↵ to end the file.

GUIDED TUTORIAL 4-6

A text file is a useful place to put a few notes at any time. You do not need any software except DOS to do this. You can create a file, JOB, on your Work disk that contains the text "My job is challenging."

STEP 1 Place your Work disk in drive A.

STEP 2 Type **COPY CON A:JOB** and press Enter↵.

STEP 3 Type **My job is challenging** and press Enter↵.

STEP 4 Press F6 and press Enter↵ to end the file.

ON YOUR OWN EXERCISES

1. Create a text file named TYPING on your Work disk that contains the following lines:

TYPING TEXT IS EASY.
UNFORTUNATELY, THERE IS NO SPELLING CHECKER.
IF I AM NOT CAREFUL, MY FILE WILL CONTAIN ERRORS.

Print the current screen to show the work that you have done, then clear the screen.

2. Enter the following names and addresses into a file named ADDRESS.TXT on your Work disk. Enter a blank line after each city, state, and zip code line:

Jim Smith
11 North Avenue
Cleveland, OH 44040

Mary Barton
654 Oak Street
Glenn, MI 49410

Paul Hazel
876 Oak Branch Way
Baltimore, MD 21237

Print the current screen, then clear the screen.

3. Create a text file called BIRDS.TXT on your Work disk. The file should contain the following text:

Robins
Chickadees
Finches
Blue Jays
Cardinals
Orioles

Print the current screen.

USING TYPE TO VIEW A TEXT FILE

When you have a short text file, you may want to look at its contents on your screen, using the TYPE command. A longer file lists more than one screen of information and may be easier to look at with the PRINT command, which we discuss later in this chapter.

The TYPE command displays the contents of a text file on your screen. When you attempt to look at file types other than text files, graphics characters and other unreadable information may display on your screen. Figure 4-3 illustrates how TYPE displays with text files. Figure 4-4 illustrates how TYPE displays nontext files.

```
C:\>type keepthis.txt
DOS waits for you for you to type text
Each time you press Enter at the end of a line, a line is created
When you finish making text entries you need to tell DOS you are finished
You can do this by pressing F6 or Ctrl+z
When you press Enter DOS completes the file
DOS displays a message indicating that 1 file has been copied

C:\>type c:\autoexec.bat
@ECHO OFF
PROMPT $p$g
PATH C;\WINdows;C:\DOS\;C:\;C:\WP51\;C:\WPC\;C:\WPWIN\
rem loadhigh c:\utility\1mouse >nu1
rem doskey
set temp=c:\windows\temp

C:\>
```

Figure 4-3
TYPE can display text files

```
C:\>type c:\dos\format.com
ºªøˆConverted    MX¨¡      ≥          ∫


                                  å≠ÚÚÚÚØØØØØØ
√Ó
                ˇ˝ÓÁ·˜‰o
                          /¤()(((
                                  °°°°°‡‡
                                          ¿Æ’``````

C:\>
```

Figure 4-4
Non text files are not meant to be viewed with TYPE

Although applications such as word processing programs may seem to record only the text that you enter, the files they create usually include special codes which control text formatting and printing. These files are not text files and will not work correctly with TYPE. Most word processing packages have a special option for saving your word processing file as a text or ASCII file.

TYPE COMMAND SYNTAX

The TYPE command is used to display information from a text file on your screen.

The syntax of the TYPE command is:

pathname specifies the file that you want to display. Pathname must provide the filename, but it may also include a drive, directory, or both if the file is not on the current drive and directory.

TYPE pathname

Many accounting and database programs can print a report to a file. Normally, these files are stored on disk as text files.

To display a text file on your screen:

1. Type **TYPE** followed by the name of the file that you want to view.
2. Press Enter↵.

GUIDED TUTORIAL 4-7

You can look at the file that you created in exercise 1 after Guided Tutorial 4-6.

STEP 1 Place your Work disk in drive A and type **A:**.

STEP 2 Enter **TYPE TYPING** at the DOS prompt.

DOS displays the data in the file like this:

```
TYPING TEXT IS EASY.
UNFORTUNATELY, THERE IS NO SPELLING CHECKER.
IF I AM NOT CAREFUL, MY FILE WILL CONTAIN ERRORS.
```

GUIDED TUTORIAL 4-8

You can look at a file with a filename extension, but you must specify the extension as part of the command entry.

STEP 1 Place your Work disk in drive A.

STEP 2 Type **TYPE ADDRESS.TXT**.

DOS displays the contents of the file like this:

```
Jim Smith
11 North Avenue
Cleveland, OH 44040

Mary Barton
654 Oak Street
Glenn, MI 49410

Paul Hazel
876 Oak Branch Way
Baltimore, MD 21237
```

GUIDED TUTORIAL 4-9

You can look at a file that is not on the current disk by specifying the location of the file along with the filename.

STEP 1 Place your Student disk in drive A.

STEP 2 Make drive C active by typing **C:** and pressing Enter↵.

STEP 3 Enter **TYPE A:MYGRADES.TXT** and press Enter↵.

This command looks at MYGRADES.TXT in drive A. Since you specified the location of the file, DOS displays the file even though it is not located on the current drive. A file's location is called the file path. We learn more about different file paths in Chapter 5.

ON YOUR OWN EXERCISES

1. Display the contents of the file CARS.TXT from your Student disk on the screen, then print the screen.

2. Display the contents of the file FLOWERS.TXT from your Student disk on the screen, then print the screen.

3. Attempt to display the contents of the file BUDGET.WK1 from your Student disk. Since it is not a text file, do not be surprised if you cannot read the file. Print the screen.

4. Attempt to display MEMO.DOC from your Student disk with the TYPE command. Although you may be able to read some of the file contents, you will not be able to read it all since word processing codes within the file will not allow you to do so. Print the screen.

USING PRINT TO LOOK AT A TEXT FILE

While the TYPE command is a good way to look at a short file, with a longer file the beginning of the file scrolls off the screen before you can look at the end of it. Also, the TYPE command does not create a permanent copy of the file for reference. The PRINT command solves these problems since it prints the contents of your file out on your printer.

The syntax for printing the file ADDRESS.TXT is:

PRINT ADDRESS.TXT

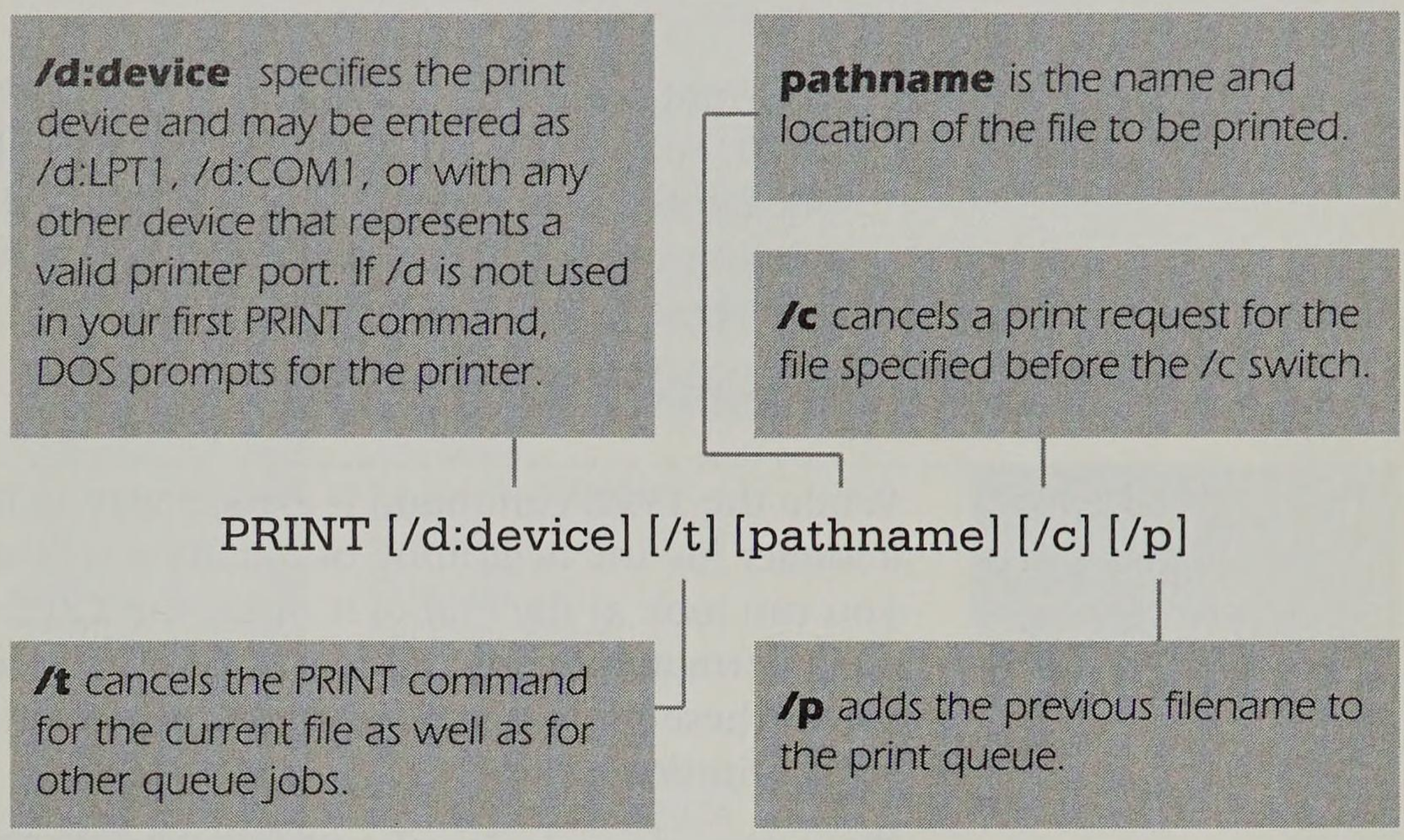
The first time you use the PRINT command during a session, you must tell DOS what print device you want to use. When DOS asks, you can accept the default by simply pressing Enter↵. If you need to use a different print device, such as LPT3, you would type **LPT3** before pressing Enter↵. After you indicate the print device to use, DOS starts sending the file's contents to your printer. Subsequent print requests assume that the print device remains the same.

NOTE: PRN and LPT1 are equivalent entries and assume that your printer is attached to the first printer port on your machine. If you want to use another printer port, check with your lab assistant to see what other device options are available for other printer ports or network printers before trying other options.

PRINT COMMAND SYNTAX

This command allows you to print text files. You may use it to create printed copies of your batch files. All switches except for /c, /p, and /t must be used the first time that you use PRINT during a DOS session.

The syntax of the PRINT command is:



NOTE: If you are working in a classroom with shared printers, you will find it easier to redirect output to the printer. You might enter TYPE filename >PRN. PRN is the name used to refer to the printer. Both printer names and the redirection symbol, >, are covered in more detail in Chapter 7.

GUIDED TUTORIAL 4-10

To print a text file that is the first file printed during your current DOS session, you need to remember the extra step to confirm or change the print device used.

STEP 1 Place your Work disk in drive A.

STEP 2 Type **PRINT A:TEXT** and then press Enter↵.

This tells DOS that you want to print the file TEXT that you created earlier.

STEP 3 Press Enter↵ to accept PRN.

You are prompted to indicate a print device since this is your first print request in this DOS session.

GUIDED TUTORIAL 4-11

If you have already printed in the current DOS session, you can save a step when you print again.

STEP 1 Place your Work disk in drive A.

STEP 2 Type **PRINT A:GRADES.TXT** and then press Enter↵.

This command sends the contents of the GRADES.TXT file to your printer.

GUIDED TUTORIAL 4-12

If you want to print multiple files that can be defined with a wildcard pattern, you can print the files with a single print request.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **PRINT A:TEXT?** and then press Enter↵.

This command prints the files TEXT1, TEXT2, and TEXT3 on the Student disk.

GUIDED TUTORIAL 4-13

If you just requested a print operation that prints more files than you intended, you can cancel a print request for a file.

STEP 1 Type **PRINT TEXT3 /c** and press Enter↵.

This command cancels the request in the print queue to print TEXT3,

GUIDED TUTORIAL 4-14

To add a request to the print queue you can use the /p switch.

STEP 1 Type **PRINT CARS.TXT /p** and press Enter↵.

This command adds a request to print CAR.TXT to the current print queue.

ON YOUR OWN EXERCISES

1. Print the file CARS.TXT from your Student disk.

2. Print the file FLOWERS.TXT from your Student disk.

3. Request a print for several print files including CARS.TXT, then cancel CARS.TXT from the print queue.

USING SPECIAL KEYS WITH DOS

When you enter a command, DOS executes your request and stores the command as a template that you can access to create another request. As you enter each new DOS command, the current template is replaced with a new one.

You can use function keys 1 through 4 as well as several special keys to access the template in building a new command line. This helps you build a series of similar entries quickly or correct a syntax error in a DOS command with a minimum of work. You can copy a character at a time, a group of characters, or the entire entry from this template to the command line. You can insert additional characters in the middle of copied character groups or delete unneeded sections.

With DOS 5 and DOS 6 you can extend your access to prior commands with DOSKEY. You can type DOSKEY at the DOS prompt and DOS will begin recording each entry for later access. Because DOSKEY does require some extra memory, its use is dependent on how much memory you have available. Usually it is set to come up when you first load your system. To see if it is, you can press the [↑] repeatedly to move back through DOS commands that it has saved. You can also use [↓] to move back through the DOS comands previously displayed with the [↑]. All of the examples in this section work with the previous command and are not dependent on having DOSKEY active in your system.

COPYING THE ENTIRE TEMPLATE TO THE COMMAND LINE

You can press [F1] or [→] repeatedly to copy the template character by character, to the command line. This allows you to replace any character in the existing template by typing a character instead of pressing [F1] or [→] for that character. You can also use [F3] to copy the entire template to the command line at once. This approach is useful when you want to repeat the last command with a switch added to the end of it. For example, your last entry may have been DIR A:,

and now you want to process the command, DIR A: /P. Pressing F3 places DIR A: in the command line, and all you need to do is press Spacebar and then type **/P**.

SPECIFYING THE AMOUNT TO COPY

When you want to copy part of the template to the command line, you can identify the character that follows the part you want to copy. All you need to do is press F2 and then type the character that follows the part of the template that you want to copy. For example, if your last entry was DIR A: and you want to look at the directory for a disk in drive B, press F2, then type **A** for a command line entry that reads DIR . Type a **B**, then either type the **:** needed to finalize the entry or press → or F3 to bring it down from the template and press Enter↵.

When the template contains many instances of the character you are using to end the copy process, you need to repeat the process until the amount of the template that you want to use has been copied to the command line.

REMOVING A GROUP OF CHARACTERS FROM THE TEMPLATE

Sometimes you want to reprocess a DOS command after removing some characters from the template. The F4 key deletes all the characters from the current location in the template to the next occurrence of the character that you specify.

If the last command that you processed was DIR A:*.* and you want to reprocess the command without the A:, you can press F2 and then type **A** to copy everything up to but not including the A. Press F4 and then type ***** to delete the next two characters. Press F2 to copy the remaining characters from the template to the command line, and the result is DIR *.*.

GUIDED TUTORIAL 4-15

Sometimes the easiest way to reprocess a command that is very similar is to copy the entire command to the command line and then delete the unneeded entries at the end.

STEP 1 Place your Student disk in drive A and type **A:**.

You will continue to work with this disk throughout all the exercises in this section.

STEP 2 Type **PRINT TEXT1**.

STEP 3 Press F3.

This copies the entire command to the command line.

STEP 4 Press ← Bksp to delete the 1.

STEP 5 Type **2**.

STEP 6 Press Enter ↵ to reprocess the command.

GUIDED TUTORIAL 4-16

Sometimes all you need to change is one character to alter the last entry into the one that you need now.

STEP 1 Type **PRINT TEXT3** and press Enter ↵.

STEP 2 Press F2.

STEP 3 Then type **3** to copy everything up to but not including the 3.

STEP 4 Type **1**.

STEP 5 Press Enter ↵ to reprocess the request as PRINT TEXT1.

GUIDED TUTORIAL 4-17

No matter how well you type you will always make typing mistakes from time to time. When you are missing a letter, you can copy the command up to the missing letter and then insert the letter.

STEP 1 Type **PRINT TXT1**.

DOS rejects your request since it cannot find a file with that filename.

STEP 2 Press F1 or the → until you have copied PRINT T to the command line.

STEP 3 Press Ins.

STEP 4 Type **E**.

STEP 5 Press F3 to copy the remainder of the command line.

STEP 6 Press Enter ↵.

ON YOUR OWN EXERCISES

1. Print TEXT1 from the Student disk. Using F3, recreate the request, but print TEXT2.

2. Change the PRINT command to the TYPE command, and look at the contents of TEXT2.

3. Display TEXT3 by reprocessing the last request to change it to TYPE TEXT3.

4. Use the DIR command to see how many files on your student disk match the pattern TEXT?, but make your entry as efficient as possible by using the special DOS keys.

5. Print the files OFFICE1.TXT and OFFICE2.TXT from the Student disk with two separate print requests that use the DOS function keys to minimize typing for the second request.

RENAMING FILES

It is important that your files have meaningful names. When you assign your files non-meaningful names, you must always wonder what they contain. A self-imposed set of rules can help you establish consistency. However, you can use the RENAME command when you happen to create a file that does not follow your naming standards.

When you use the RENAME command, the file itself is not changed, only the name by which you access the file.

RENAME COMMAND SYNTAX

This command is used to change the name by which you access a file. It does not change the file's contents.

The syntax of the RENAME command is:

drive is a drive specification that is used when the file being renamed is not on the current drive.

filename1 specifies the name that you currently use to access the file.

RENAME [drive] [path] filename1 filename2

path is a directory specification that is used when the file being renamed is not in the current directory.

filename2 specifies the new name that you will use to access the file.

GUIDED TUTORIAL 4-18

You can change the filename extension of the three files on your Student disk whose names start with TEXT.

STEP 1 Make sure your Student disk is in drive A and type **A:** to make it active.

STEP 2 Type **RENAME TEXT? TEXT?.TXT**.

STEP 3 Type **DIR TEXT?** to check your work.

GUIDED TUTORIAL 4-19

Rename a file on a different drive by making that other disk active as a part of the command.

STEP 1 Make drive C active by typing **C:**.

STEP 2 Type **RENAME A:TEXT3.TXT DATA3.TXT**.

This command renames TEXT3.TXT to DATA3.TXT.

STEP 3 Type **A:DIR DATA3.TXT** to check your work.

ON YOUR OWN EXERCISES

1. Rename the file FLOWERS.TXT on your Student disk FLOWERS, and then change the name back to FLOWERS.TXT. Print the screen to show your work.

2. **a.** Using COPY CON, create a file named FIDO on your Work disk containing the following data:

   New York 10101
   Baltimore 21201
   Berkeley 94710

   b. Rename the file FIDO to something more appropriate. Print the screen to show your work.

VOCABULARY

ASCII

A type of text file that follows the American Standard Code for Information Interchange for representing each character stored in the file.

Filename

A one- to eight-character filename entered in uppercase or lowercase letters. A filename must not contain specific restricted characters.

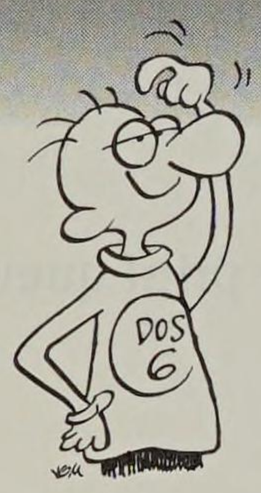
Filename extension

A one- to three-character extension separated from a filename by a period. This extension is automatically added by some programs.

Function keys

The keys labeled F1 through F10 or F12 that perform a variety of tasks depending on the program that you are working with. In DOS, the function keys can help you reprocess all or part of the last command line entry.

WHAT YOU LEARNED



In this chapter you learned more about files. Some of the things you have learned are:

- How to use a valid filename and filename extension.
- What filename extensions may indicate about file contents.
- How to create a quick text file with COPY CON.
- How to display the contents of a text file on your screen or printer.

REVIEW QUESTIONS

Answer each of the following with *true* or *false*.

_____ **1.** Every file must have a filename extension.

_____ **2.** DOS batch files have the filename extension BAF.

_____ **3.** You can use from one to ten characters in a valid DOS filename.

_____ **4.** You can use the TYPE command to display the contents of text files.

_____ **5.** You can use the PRINT command to print the contents of your current screen.

_____ **6.** To reuse the previous DOS command, press F10.

_____ **7.** ASCII files are used to store DOS commands.

_____ **8.** You can only create text files with EDLIN.

_____ **9.** Regardless of what is stored in a file, it displays on the screen in readable characters due to the DOS 6 conversion capabilities.

_____ **10.** Using PRINT with the /p switch purges the print queue.

IN THE LAB

1. Examine the following potential filenames. Mark each one that is an acceptable filename choice with a Y and each one that is unacceptable with an N.

SALES BUDGET n
BUDGET91 y
92BUDGET y
LAST ONE n
SALERS[2] n
PILOT.PROJ y
PRINTOUT.[2] n
7.WORDS n
SLS_91 y

2. Create a text file named STARS.TXT on your Work disk. Your file should contain the following lines:

   JIM DAVIS - PIANO PLAYER
   MARY ROGERS - DANCER
   KIM JONES - SINGER

   Print the file.

3. Print the TEXT1.TXT file from your Student disk. Print the screen.

4. Display the TEXT2.TXT file from your Student disk. Print the screen.

5. Rename TEXT1.TXT and TEXT2.TXT to TEXT1 and TEXT2. Rename the DATA3.TXT file from your Student disk TEXT3. Use Print Screen to show your entries.

6. Place your Student disk in the drive. Make the drive containing this disk active. Enter the following command:

   DIR S*.*

   Using the function keys, change S to T, and reprocess the command.

   Using the function keys, reprocess the revised command with a /w switch at the end of the command. Use Print Screen to show your work.

7. Display all the files on your Student disk where the filename begins with T. Use Print Screen to show your work.

8. Explain the difference between a formatted and an unformatted text file.

9. Program files have an extension of _____ or _____.

THINKING ON YOUR FEET

A friend of yours left for the weekend before completing her part of a class project where she needs to submit a file containing city names and another file containing the corresponding states. You offered to finish it for her, but forgot to ask her the name of the file. She told you that she stored the names of cities in a text file on the Student disk, and you think you can find it without the name. Turn on the Continuous Print Screen feature (Ctrl-PrtScr) before starting to be able to give her a log of the entire session. Determine which files on the student disk are likely candidates using the filename extensions to help you, and print the contents of the file that you think contains the names of cities. Create a new text file that contains the names of the states the cities are located in and name this new file STATE.TXT and store it on your Work disk.

CHAPTER 5

WORKING WITH DIRECTORIES

After completing this chapter, you will be able to:

- Customize your DOS prompt.
- Create a directory.
- Change the default directory.
- Remove a directory.
- Generate a graphic view of a directory structure.
- Execute programs from other directories.

OVERVIEW

A hard disk has the capacity to store millions of characters of information. You would find it difficult to locate files if they were all stored in the main or root directory. DOS allows you to create directories beneath the root directory to help you organize your files so you can locate them quickly. Using a directory structure is a logical method for creating categories that represent groups of related data. For example, you may organize your computer at home so that one directory contains all of your personal letters, another all of your school papers, and a third the files you use for personal finance. Arranging your files in directories organizes them so it is easier to locate the one file that you want. In this chapter, you will work with directory structures on floppy disks, although directory structures are more usually constructed on hard disks. As you work with different directories, you may find it useful to change your DOS prompt to indicate which directory is active at all times.

WHAT ARE DIRECTORIES?

If you have never worked with directories before, try thinking of how they resemble an office filing system, as Figure 5-1 shows. You could have a line of file cabinets and throw documents in any open drawer, never to find them again. On the other hand, assuming you ever want to find your documents again, you can organize the file cabinets with labels on each drawer indicating the type of documents stored in the drawer, and then divide the drawers into sections and divide the sections into individual folders. Filing takes longer with this method, but you can find the filed information easily. A file cabinet with its drawers and folders organizes papers in the same way a disk with its directories and subdirectories organizes electronic information.

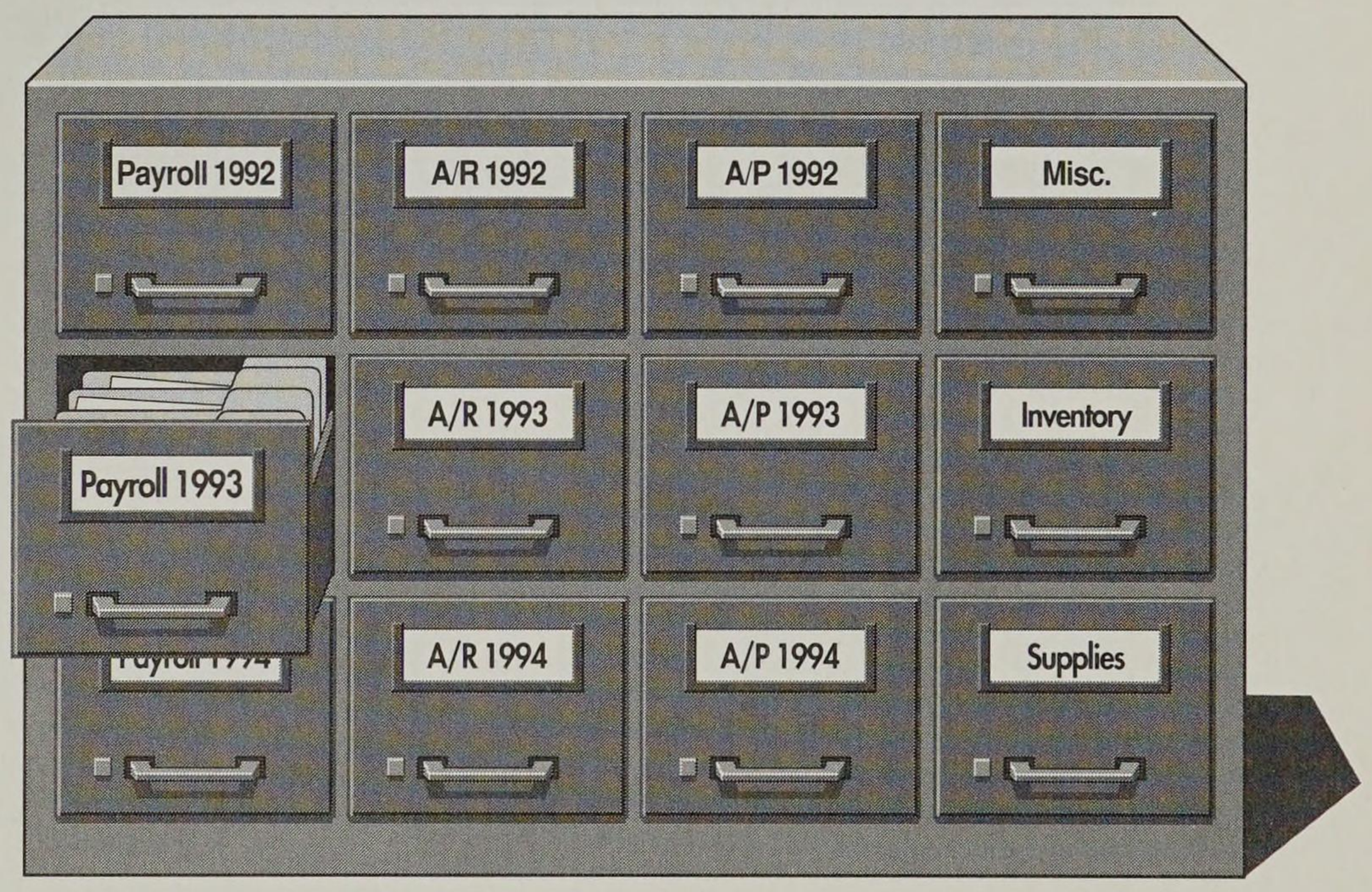


Figure 5-1
Directories are organized like filing cabinets

A directory is just a file that stores a list of information about a group of files, much like a table of contents in a book is a list of the various chapters. The directory is used to organize other files on your system for easy retrieval. The directory is a file itself, containing only a small amount of information about other files. It does not physically contain files or divide your hard or floppy disk into sections; instead, the directory tells DOS where files are stored on the disk. All disks, both floppy and hard, contain root directories. You can create up to seven levels of directories beneath the root directory for a total of eight levels. A directory below another directory is called a subdirectory. A directory that is above a subdirectory is called a parent directory. For most floppy disks, the root directory is sufficient, since they can hold a much smaller amount of data than a hard disk. For hard disks, however, you will want to create enough directories to organize your data logically.

Though storing all of your files in the root directory is clearly a bad idea, there is no right or wrong way of organizing the subdirectories. You can organize your data by how it is used or by who uses it. For example, it may make sense to create a directory for each application you use. When more than one department uses a computer, it may also make sense to create a subdirectory for each department under each program directory. Figure 5-2 shows a directory structure for the following applications: WordPerfect®, Quattro® Pro, Paradox, and Corel DRAW®. Subdirectories under WordPerfect contain memos and reports. The other applications each have their own subdirectories.

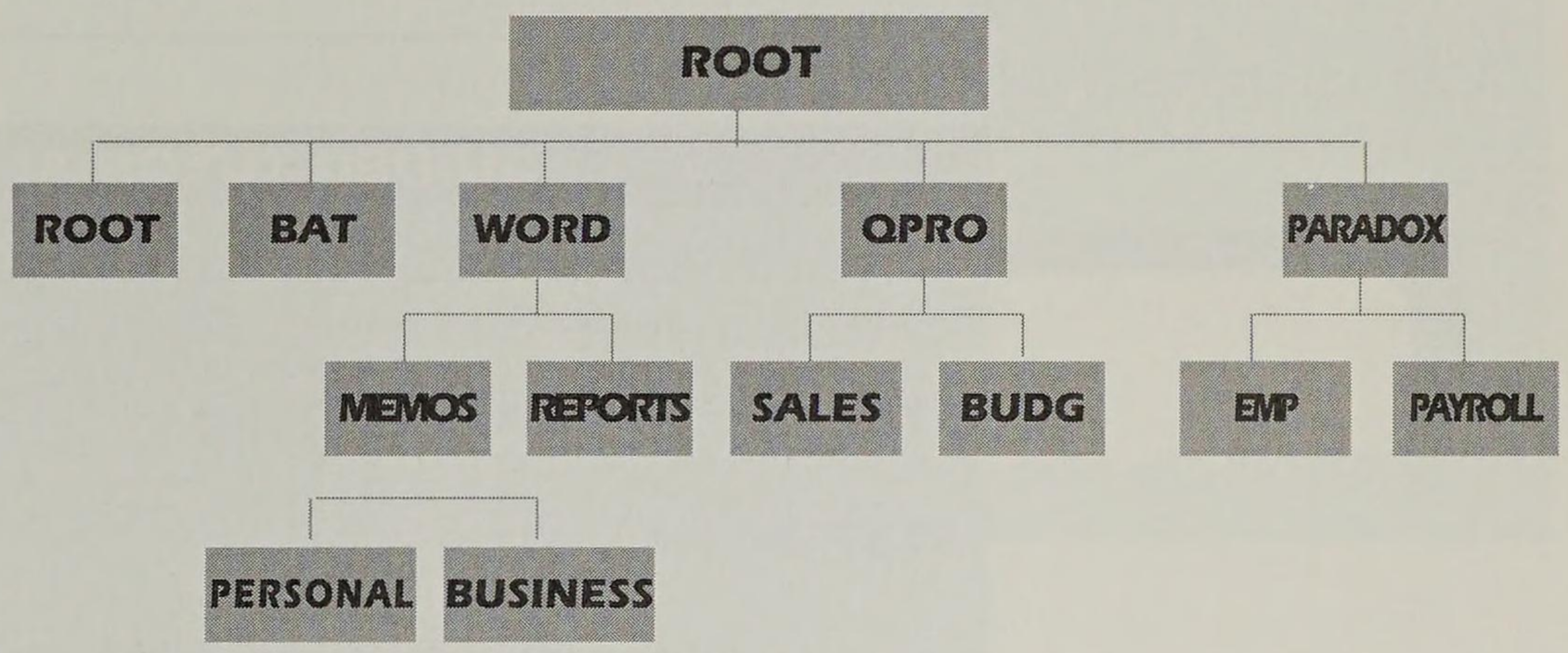


Figure 5-2
A directory structure

CHANGING THE DOS PROMPT

The PROMPT command lets you change the DOS prompt. The DOS 6 default DOS prompt displays the current drive followed by a greater-than sign, as in C>. There are many reasons that you might want to change your DOS prompt. As you work with different directories, you may want to customize the DOS prompt so that it shows which directory is currently active. You may also want to present a constant message such as the name of a company. By using

the internal PROMPT command with a variety of parameters listed in the box below, you can dramatically alter the prompt displayed on your screen.

PROMPT COMMAND SYNTAX

The PROMPT command changes the appearance of the DOS prompt. You can use any combination of text and parameter entries to define what you want the prompt to look like.

PARAMETER	EFFECT
$b	Displays a vertical bar character
$d	Displays the date
$e	Displays an ANSI.SYS ESC character
$g	Displays >
$h	Deletes the previous character
$l	Displays <
$n	Displays the default drive letter
$q	Displays an = sign
$p	Displays the drive and path
$t	Displays the current time
$v	Displays the DOS version number
$$	Displays a $ sign
$_	Moves the cursor to the next line
text	Appears as typed

GUIDED TUTORIAL 5-1

You can change the DOS prompt to display the current time followed by a greater than symbol. Follow these steps:

STEP 1 Type **PROMPT tg**.

STEP 2 Press Enter↵.

If the time is 10:15:00 AM, the DOS prompt will look like this:

```
10:15:00.00>
```

GUIDED TUTORIAL 5-2

To change the DOS prompt to Unauthorized users beware!!>, follow these steps:

STEP 1 Type **PROMPT Unauthorized users beware!! $g**.

STEP 2 Press Enter↵.

The DOS prompt will look like this:

```
Unauthorized users beware!!>
```

GUIDED TUTORIAL 5-3

You can change the DOS prompt to show the current drive and directory followed by a greater-than symbol. Follow these steps:

STEP 1 Type **PROMPT pg**.

STEP 2 Press Enter↵.

If the current directory is the root directory, the DOS prompt will look like this:

```
C:\>
```

ON YOUR OWN EXERCISES

1. Change the DOS prompt to show the current date.

2. Change the DOS prompt to show Hello>.

3. Change the DOS prompt to show the current drive and path.

CREATING DIRECTORIES

As explained earlier, directories are used to organize your files, just as you may use a file cabinet and folders to organize your papers. The first step in organizing your files is to determine how you want them organized, then you create the directories you will use to organize them, and then move or copy the files to the appropriate directories. DOS provides an easy method for creating a directory. The internal MD (Make Directory) command creates a new directory for you. Directory names follow the same rules as filenames.

To create a directory on the current drive:

1. Type **MD**.
2. Type the name of the directory.
3. Press Enter↵.

When you create a directory that is not to be a subdirectory of the current directory, you must specify the path in step 3. For example, when the current directory is SALES, and you want to create a subdirectory called REPORTS under directory ACCT, you would enter:

MD \ACCT\REPORTS

If you did not specify the path and you only enter MD REPORTS, you would have created a subdirectory called REPORTS under the SALES directory.

GUIDED TUTORIAL 5-4

Develop a directory structure that organizes different types of word processing documents. Some documents are letters, some are reports, others are boilerplate forms, and others are administrative documents. You will create four subdirectories called LETTERS, REPORTS, FORMS, and ADMIN, that are the first level of directories under the root directory.

STEP 1 Start in the root directory of a Work disk by typing **A:** and pressing Enter↵.

STEP 2 Type **MD \LETTERS** and then press Enter↵.

STEP 3 Type **MD \REPORTS** and then press Enter↵.

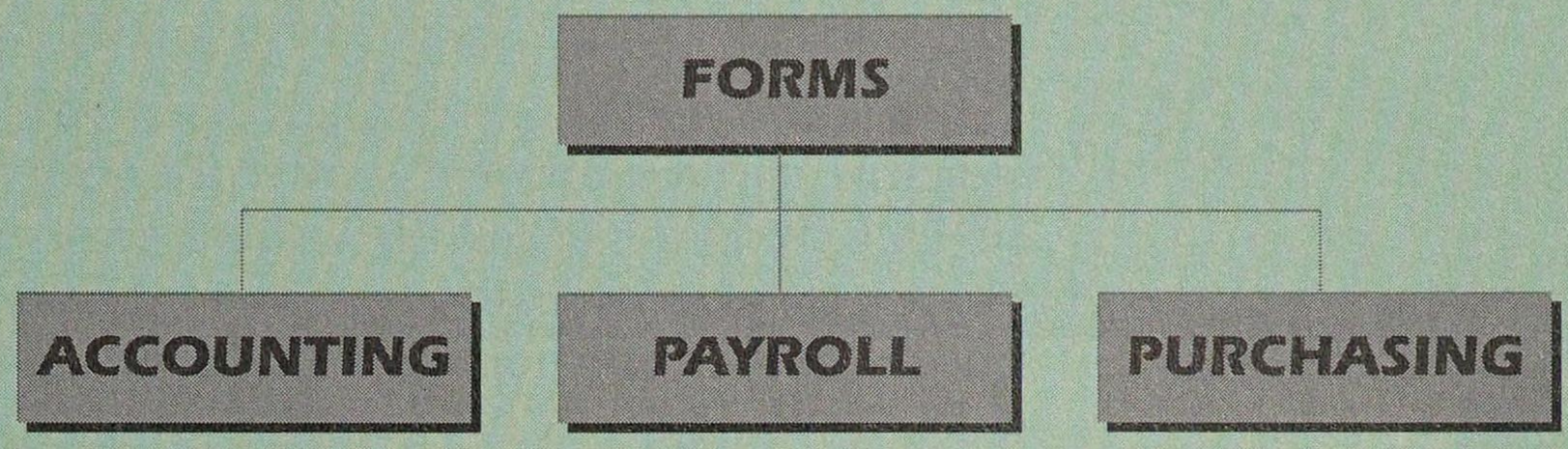
STEP 4 Type **MD \FORMS** and then press Enter↵.

STEP 5 Type **MD \ADMIN** and then press Enter↵.

STEP 6 Type **DIR** and press Enter↵ to view the subdirectories you have created.

GUIDED TUTORIAL 5-5

You have just learned that the Accounting, Payroll, and Purchasing departments wish to store boilerplate or template forms on the computer. You can create three subdirectories under the FORMS directory. The structure would look like this:



To create the three new subdirectories from the root directory, you would enter:

STEP 1 Type **MD \FORMS\ACCTNG** and then press Enter↵.

STEP 2 Type **MD \FORMS\PAYROLL** and then press Enter↵.

STEP 3 Type **MD \FORMS\PURCHASE** and then press Enter↵.

STEP 4 Type **DIR \FORMS** and press Enter↵ to view the newly created subdirectories.

ON YOUR OWN EXERCISES

1. Using a Work disk in drive A, create the following directories: ONE, TWO, and THREE. Display the newly created directories and do a print screen.

2. Using a Work disk, create the directory FRUIT. Then create the subdirectories ORANGE, CHERRY, PLUM, PEAR, and APPLE. Under the APPLE directory, create the subdirectories GSMITH, IDARED, and MACTOSH. Display your newly created directories and do a print screen.

CHANGING THE DEFAULT DIRECTORY

Once you have several directories on your disk, you will want to be able to move to them. Otherwise, the root directory is always the current directory, and you will need to specify the path for every file that is not in it. The path for a file is a guide to the drive and directory where the file is located. You need to use the path whenever you want to refer to a file that is not in the current directory.

A path starts with the letter of the drive accessing the disk the file is located on. It then traces the directory tree leading to the file. For example, say you needed to enter the path for a file called JOHN.DOC in the PERSONAL subdirectory shown in Figure 5-3. You would create a path by following the branches of the directory tree to that file, separating each element of the path with a backslash. It would read C:\WORD\MEMOS\PERSONAL\JOHN.DOC.

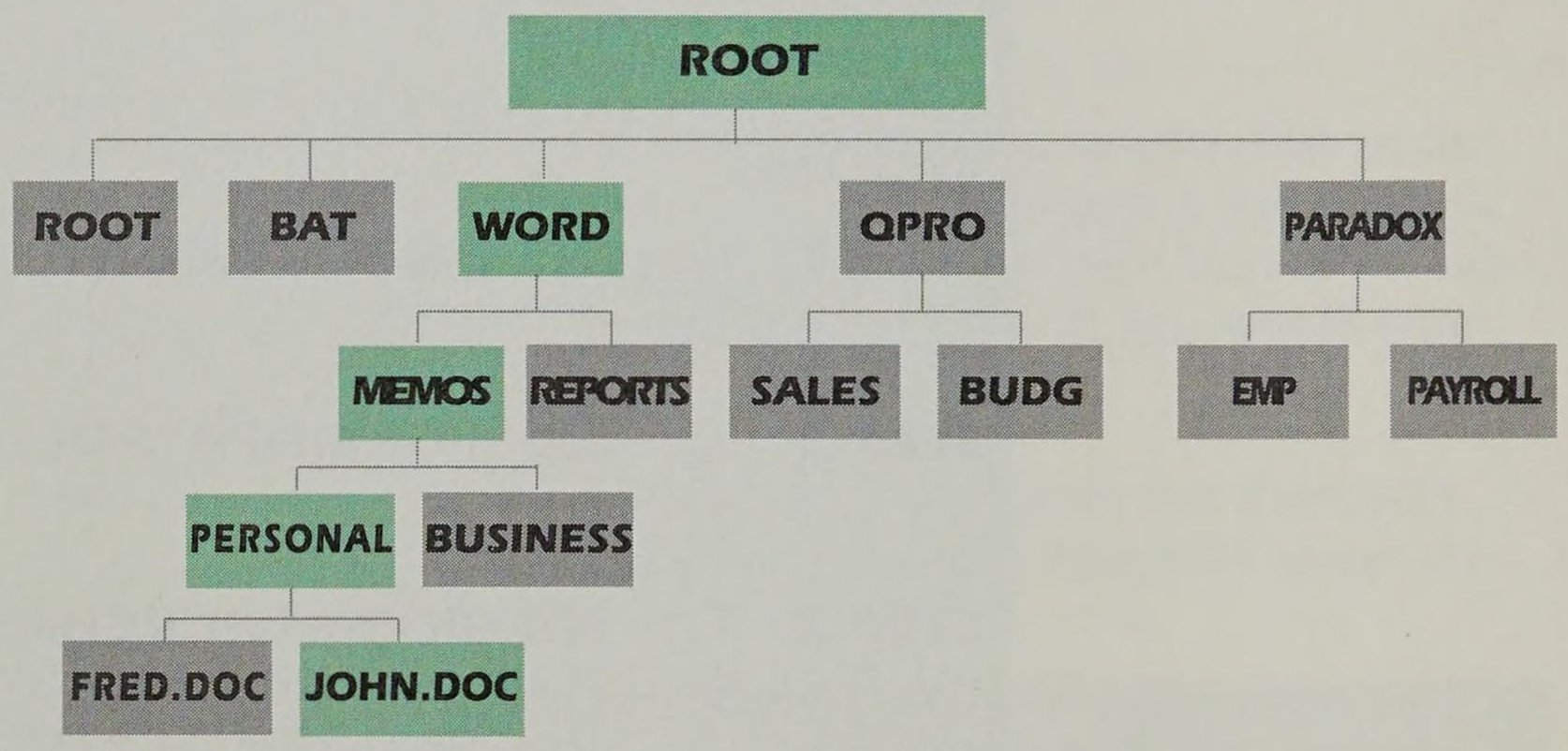


Figure 5-3
A path through a directory structure

When you change the default directory, you eliminate the need to enter long pathnames like C:\WORD\MEMOS\PERSONAL\JOHN.DOC when displaying directories, copying files between them, and performing other file management tasks.

The DOS internal CD (Change Directory) command lets you move between directories. You can move to a subdirectory of the current directory, move up toward the root directory, or go directly to the root directory. Your entry becomes the current directory.

To change to a subdirectory of the current directory:

1. Type **CD**
2. Type the pathname of the directory
3. Press Enter

To move directly to the root directory, type \ as the pathname. To move to the parent directory of the current directory, which is one level closer to the root directory, type .. as the pathname. After you change the current directory, you can use the DOS internal DIR command to view a listing of the files in that directory.

GUIDED TUTORIAL 5-6

Use the Work disk created in the previous tutorial. Your current directory is the root directory, and you need to display the files in its subdirectory FORMS. You want to make sure that you are in the correct directory when you make the change. To do this:

STEP 1 Type **PROMPT PG** and press Enter↵.

STEP 2 Type **CD FORMS** and press Enter↵.

DOS displays the following prompt:

```
A:\FORMS>
```

STEP 3 Type **DIR** and press Enter↵.

STEP 4 Type **CD PAYROLL** and press Enter↵.

DOS displays the following prompt:

```
A:\FORMS\PAYROLL>
```

GUIDED TUTORIAL 5-7

After looking at the files in the subdirectory PAYROLL, you want to set the current directory back to \FORMS. You would:

STEP 1 Type **CD..** and press Enter↵.

DOS displays the following prompt:

```
A:\FORMS>
```

Next, you want to set the current directory back to the root directory.

STEP 2 Type **CD..** and press Enter↵ again.

DOS displays the following prompt:

```
A:\>
```

ON YOUR OWN EXERCISES

1. Using your Student disk in drive A, change the current directory to DOS. Then change the current directory to PARADOX. Then change the current directory back to the root directory.

2. Using a Work disk in drive A, create a directory called NATIONS. Then create the subdirectories SPAIN, FRANCE, and GERMANY. Under the FRANCE directory, create the subdirectories CUSTOMS and ECONOMY. Set the current directory to CUSTOMS. Then set the current directory to FRANCE.

3. With FRANCE as the current directory, reset the current directory to the root directory on your Work disk.

REMOVING DIRECTORIES

Get in the good habit of removing directories from your disk that are no longer needed. You benefit by freeing up wasted space and by keeping your directory structure more manageable for the same reason that you benefit from taking unused file folders out of your file cabinet. As long as those extra folders are in the cabinet, you are going to have to leaf through those folders trying to find the one you do want to use, wasting time. Also, you will run the risk of filing a paper in the unused folder accidentally, and then being unable to find it when you need it.

You cannot delete a directory that still contains files or other directories with the RD (Remove Directory) command. If the directory contains files or subdirectories, you must delete those files or move them to another directory to save them, using the Delete and Move commands covered in Chapter 6. This is a fail-safe mechanism to prevent you from accidentally deleting files that you forgot were in that directory.

The RD command deletes a subdirectory of the current directory or any directory that you specify a path for. The RD command does not allow you to remove the current directory.

To remove a directory:

1. Type **RD**.
2. Type the name of the subdirectory.
3. Press Enter↵.

You can check that the directory was deleted by entering a DIR command to display the contents of its parent directory.

GUIDED TUTORIAL 5-8

On the Work disk you created in the last section, the directory \FORMS contains the subdirectories \ACCTNG, \PAYROLL and \PURCHASE. You want to delete the empty subdirectory \PURCHASE. You would:

STEP 1 Type **A:** to move to the Work disk in drive A.

STEP 2 Type **CD \FORMS**.

Assuming the DOS prompt is still set to pg, your DOS prompt should read:

```
A:\FORMS>
```

STEP 3 Type **RD PURCHASE** and press Enter↵.

STEP 4 Type **DIR** and view the contents of the \FORMS directory to ensure that the PURCHASE subdirectory has been removed.

If you wanted to delete the \FORMS\PURCHASE directory from the root directory, you could include the remainder of the directory path by typing **RD \FORMS\PURCHASE**. Only the PURCHASE subdirectory is deleted when you do this.

GUIDED TUTORIAL 5-9

The current directory is A:\FORMS, and you want to delete the empty subdirectories \PAYROLL and \ACCTNG. You would follow these steps to delete the \PAYROLL and ACCTNG subdirectories:

STEP 1 Type **RD PAYROLL**.

Your screen should look like this:

```
A:\FORMS>RD PAYROLL
```

STEP 2 Press Enter↵.

STEP 3 Type **RD ACCTNG** and press Enter↵.

STEP 4 Type **DIR** and view the contents of the FORMS directory to ensure that the subdirectories have been removed.

GUIDED TUTORIAL 5-10

Sometimes you will want to do some file maintenance on a drive other than the current drive. After you return to the C:\ drive, you want to delete the empty directory FORMS on drive A. To remove the directory, you would:

STEP 1 Type **CD..** to return to the root directory. Then type **C:** to return to the hard drive.

STEP 2 Type **RD A:\ FORMS**.

STEP 3 Press Enter↵.

STEP 4 Type **DIR A:** and press Enter↵.

ON YOUR OWN EXERCISES

1. Using the Work disk in drive A that contains the MD (Make Directory) exercises, delete directories ONE, TWO, and THREE. Display the directory of drive A and do a print screen to verify the results.

2. On that same disk, delete the MACTOSH subdirectory under the APPLE directory. Do a print screen to verify your results.

3. Delete the APPLE directory. Remember, it must be empty before it can be deleted. Do a print screen to verify your results.

USING TREE

Earlier in this book, you learned how to display the contents of a directory by using the DIR command. This command shows the first level of subdirectories and the files contained in the directory. You can also use the TREE command, which displays a graphic view of the structure of a directory. TREE displays the current directory level at the left of your screen, listing subdirectories to the right according to their relationship to the root directory. The TREE command is an external DOS command. You must be in the DOS directory to load the TREE command into memory. Figure 5-4 shows the TREE command listing the contents of drive C.

```
C:\>tree
Directory PATH listing
Volume Serial Number is 16FD-7D07
C:.
├── MOUSE
├── DOS
├── WP51
├── HSG
├── WINDOWS
│   └── SYSTEM
├── TEMP
├── DATA
│   ├── STUDENT
│   ├── INSTR
│   └── PIX
│       └── CH7
├── INSET
└── WPWIN
    ├── GRAPHICS
    └── MACROS

C:\>
```

Figure 5-4
TREE listing contents of drive C

The TREE command displays all the directories and subdirectories contained on drive C. The TREE command also displays the files in each directory when you use the /f switch. Figure 5-5 shows the TREE listing of drive C that includes the filenames.

```
C:\>tree /f
Directory PATH listing

Volume Serial Number is 16FD-7D07
C:.
│       COMMAND.COM
│       CONFIG.BAK
│       AUTOEXEC.BAT
│       CONFIG.SYS
│       HIMEM.SYS
│       PHDF3-6.PIX
│       PHDF3-8.PIX
│       PHDF3-9.PIX
│       PHDF5-2.PIX
│       APDGBFAI
│       APDGBFAO
│       WINA20.386
├── MOUSE
│           MOUSE.COM
│           README.MW5

C:\>
```

Figure 5-5
TREE display including filenames

The filenames are listed directly below each directory.

To use the TREE command to display the contents of the current directory:

1. Type **TREE.**
2. Press Enter↵.

You can also display the contents of a directory on another drive by including the drive designator in the command.

GUIDED TUTORIAL 5-11

You are not currently at the root directory but wish to display its contents. Without using the CD command to change the path to the root directory, you can:

STEP 1 Type **A:** to move to the Student disk in Drive A.

STEP 2 Type **CD \PARADOX**.

STEP 3 Type **TREE ** and press Enter↵.

DOS displays the directory structure starting at the root directory.

GUIDED TUTORIAL 5-12

You want to include the names of the files in the display of the directories. To add the file switch to the TREE command:

STEP 1 Type **CD..** to move to the root directory of the Student disk.

STEP 2 Type **TREE /F** and press Enter↵.

GUIDED TUTORIAL 5-13

To display the contents of the Student disk from the C drive, without changing directories you can:

STEP 1 Type **C:** to move back to the hard disk.

STEP 2 Type **TREE A:** and press Enter↵.

ON YOUR OWN EXERCISES

1. Display the directory structure beginning with the root directory on drive C. Perform another display that includes the filenames in the directories. Do a print screen to verify your results.

2. Display the directory structure on the Student disk beginning with the root directory. Perform another display that includes the filenames. Then display only the directory structure for the 123 directory on the Student disk. Do a print screen to verify your results.

USING PATH

Before you can load a program into memory so you can use it, you must tell DOS where the program files are located. You can use the CD command to move to the directory containing the program files and then enter the command to execute the program. However, with the PATH command, you can tell DOS to look in locations other than the current drive and directory when you tell it to start a program. This is like leaving a note on the file cabinet you store papers in, telling people who look for a paper in it, that if they cannot find the correct file folder in one location, that there are two or three other locations they can look for it.

It is common to use an equal sign (=) to serve as the blank space between PATH and your entry, although you can still use a space in that position. The PATH command can include up to 127 characters, including the word *PATH*.

You can use PATH in two ways. First, you can enter a PATH statement in your AUTOEXEC.BAT file. An AUTOEXEC.BAT file is a batch file that executes the DOS command entered in it automatically each time you boot your system. You will learn how to create a customized AUTOEXEC.BAT file later in this book. Second, you can enter a PATH command at the DOS prompt.

Your PATH command should specify the directories that contain program files. Program files are files that contain directions for DOS to carry out. An example of a program is a word processor or a spreadsheet. When you try to start a program after putting a PATH command in effect, DOS searches these directories in the order they are listed in the PATH statement. Directories in the PATH command must be separated from each other by a semicolon (;). For example, the command PATH=\;C:\GL;C:\AR;C:\AP instructs DOS to start searching the root directory, proceed to the GL directory, and then to the others if necessary, until it locates the program file to be executed by the command you entered.

If you enter a PATH command at the DOS prompt, it overrides any previous PATH commands. You can set up a default PATH statement in your AUTOEXEC.BAT file and replace it with a PATH command at the DOS prompt.

GUIDED TUTORIAL 5-14

You may have programs in the first three directories on your hard drive. You will want to be able to start these programs from any other location on the hard drive, including the root directory. To be able to, you need to include these directories in a PATH command. You can create a PATH statement that has DOS check these directories in order:

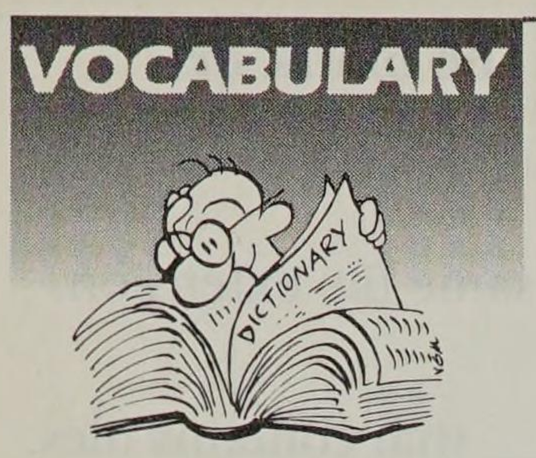
STEP 1 At the root directory of the hard drive, type **DIR/p**.

Write down the names of the first three subdirectories listed.

STEP 2 Type **PATH=C:\first directory;C:\second directory; C:\third directory**.

STEP 3 Press Enter↵.

By entering this PATH statement, you may have changed the default setup of your system. DOS may no longer be able to find programs or files in directories that were specified by the previous PATH statement. To rerun the default PATH statement, try rebooting your system, which reruns the PATH statement in the AUTOEXEC.BAT file.



AUTOEXEC.BAT file
A file you can create that contains a series of DOS commands which are automatically executed each time you boot your computer.

Batch file
A file you can create that contains a series of DOS commands which you can execute at any time by loading the batch file into memory.

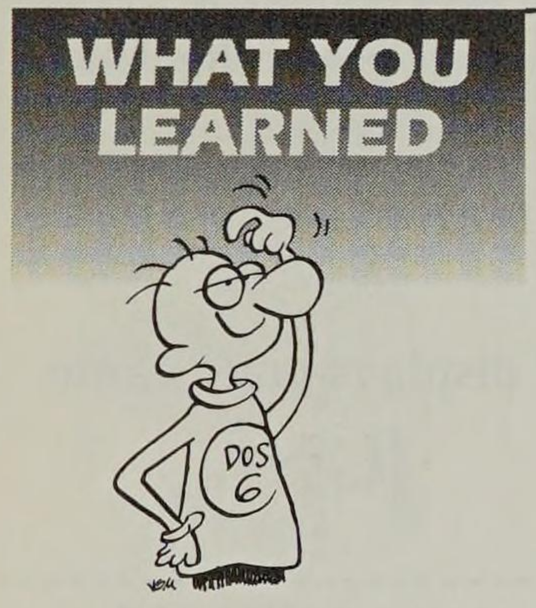
Directory
A file you create to store and organize sets of related files. It does not actually contain files but tells DOS where they are stored on the disk.

Root directory
The first directory created by DOS when a disk is formatted. Each disk contains a root directory.

Subdirectory
A directory below another directory such as the root directory.

Parent directory
A directory that contains subdirectories.

Path
The location of a file specified as its drive and directory location.



In this chapter you learned about directories. Some of the things you have learned are:

- How to change your DOS prompt to show the current directory or other information.
- How a directory organizes the files on your disk.
- How to move between directories with the CD command.
- How to create subdirectories using the MD command.
- How to customize your DOS prompt.
- How to display a graphic representation of a directory structure.
- How to enter a PATH command that allows you to execute commands from other directories.

REVIEW QUESTIONS

Answer each of the following by filling in the blank or responding with *true* or *false*:

1. Directories can only contain files with the same file extension.

2. The RD command will not delete a _____ that contains files.

3. Directories contain information about files and their locations on the disk.

4. You cannot save files on a disk without any directories at all.

5. The TREE command shows you the files in the current directory and the first level of subdirectories.

6. If you enter a PATH command that refers to the DOS directory, you can enter external DOS commands from any drive or directory.

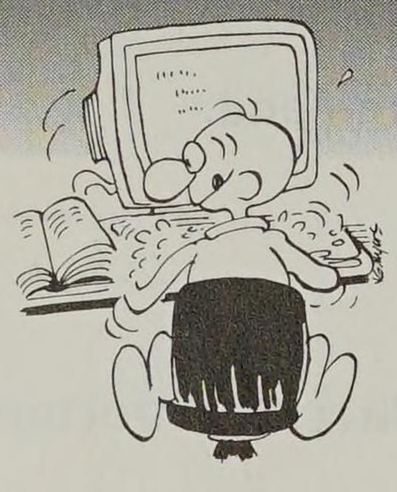
7. Directories cannot be deleted.

8. The PATH command can be entered using a _____ file.

9. You can use directories to _____ your files.

10. You can change the DOS prompt so that it displays your name.

IN THE LAB



1. Using a Work disk in drive A, create the directory ANIMALS. Under this directory, create the subdirectories MAMMALS, BIRDS, FISH, and REPTILES. Under the FISH directory, create the subdirectories TROPICAL, ARCTIC, LAKE, and OCEAN.

MD\

2. Using the directory structure created above, show a graphical display of these directories. Use the /f switch to see that there are no files in any of these directories. - use PATH

A:\ PATH = C:\DOS\ tree/F .

3. Change the DOS prompt so that it reads ZOO Computer, followed by a vertical bar.

4. Set the current directory to the root directory. Then change it to the directory ANIMALS. Then change the current directory to LAKE. Switch back to FISH, and then back to the root directory.

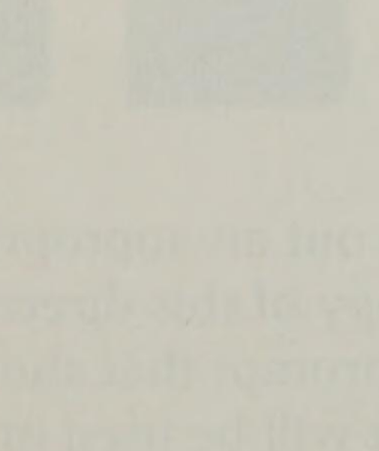
5. Move to the ANIMALS directory and delete the REPTILES subdirectory. Display the ANIMALS directory's contents to ensure the deletion was successful.

6. With the root directory as the current directory, remove the directory ARCTIC from your Work disk. Graphically display the subdirectories of the root directory to make sure the deletion was successful.

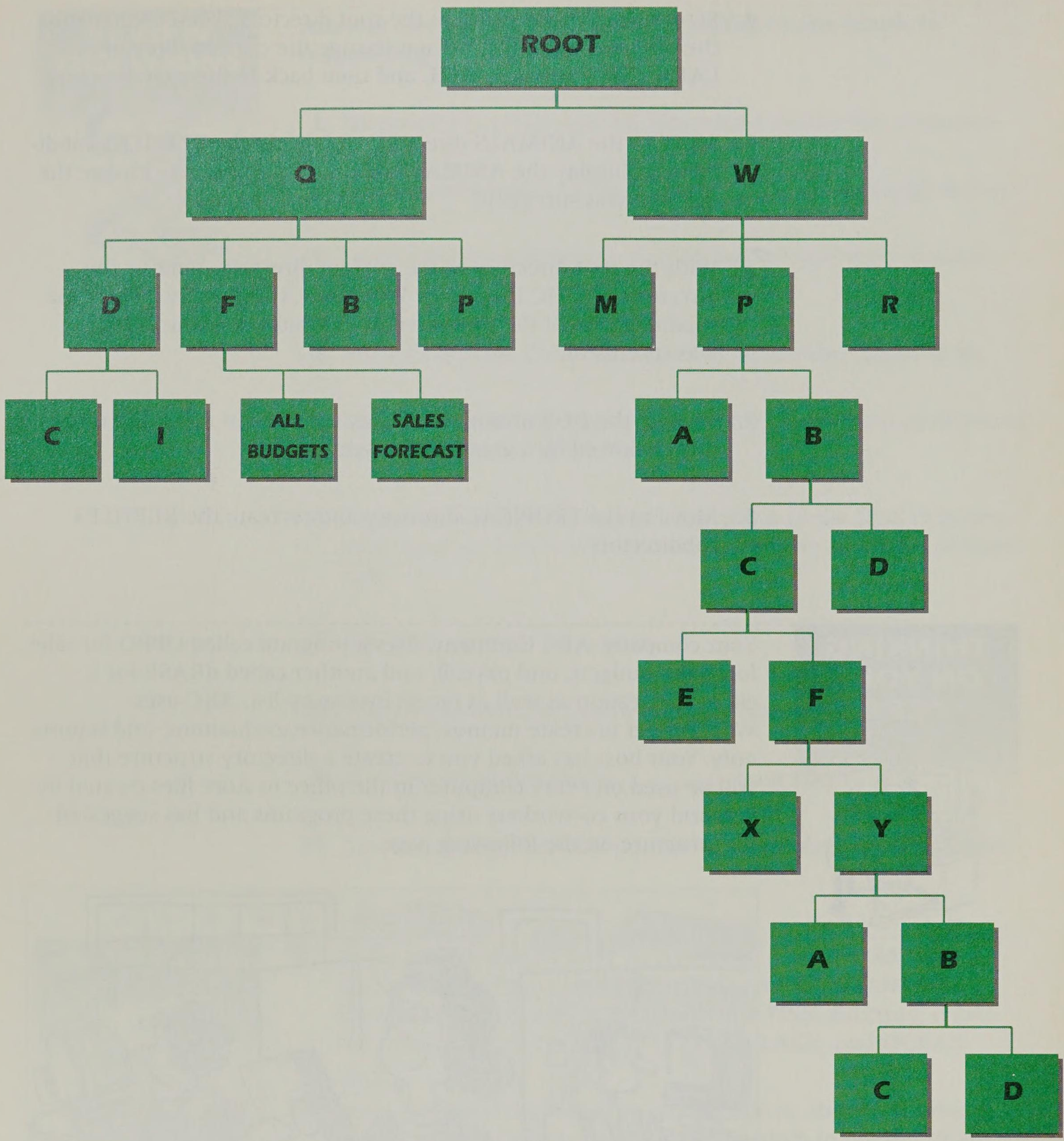
7. Change the DOS prompt to display the current drive and directory, followed by a greater-than symbol.

8. Move to the TROPICAL directory and recreate the REPTILES subdirectory.

THINKING ON YOUR FEET



Your company, ABC Company, uses a program called QPRO for sales forecasts, budgets, and payroll, and another called dBASE for a client application as well as for an inventory list. ABC uses WordPerfect to create memos, performance evaluations, and reports only. Your boss has asked you to create a directory structure that will be used on every computer in the office to store files created by you and your co-workers using these programs and has suggested the structure on the following page.



Explain what is wrong with this structure, sketch out an appropriate directory structure on paper, and then create a copy of this directory structure on your Work disk. Also, create a DOS prompt that shows the company name and the current directory that will be used on all computers in the office.

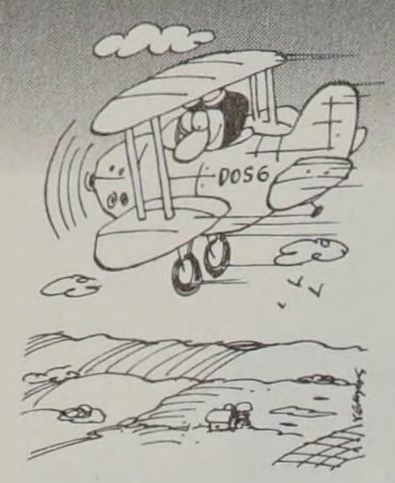
CHAPTER 6

COPYING, MOVING, AND DELETING FILES

After completing this chapter, you will be able to:

- Copy or move files from one location to another.
- Compare the information in two different files.
- Delete a file.
- Restore a deleted file.
- Display the current attributes of the files in a directory.

OVERVIEW



As you add files to your hard or floppy disk, you need to develop skills that help you manage the data your disk contains. You will need to protect important files by keeping copies of them stored in other locations. Files that are no longer needed should be deleted in order to free up disk space for new information. DOS has several file commands that are essential to managing the data stored on a disk.

USING COPY

The COPY command allows you to make a duplicate copy of a file. It is an internal command and is always available when DOS is loaded. You can create the copy on the same drive and directory as the original file or place it in a different drive or directory. You can change the name of the copy and, in fact, must do so if you want to put the copy on the same drive and in the same directory as the original file. You can copy a group of files with one command by using the asterisk and question mark wildcards. Figure 6-1 shows some of the options for the COPY command.

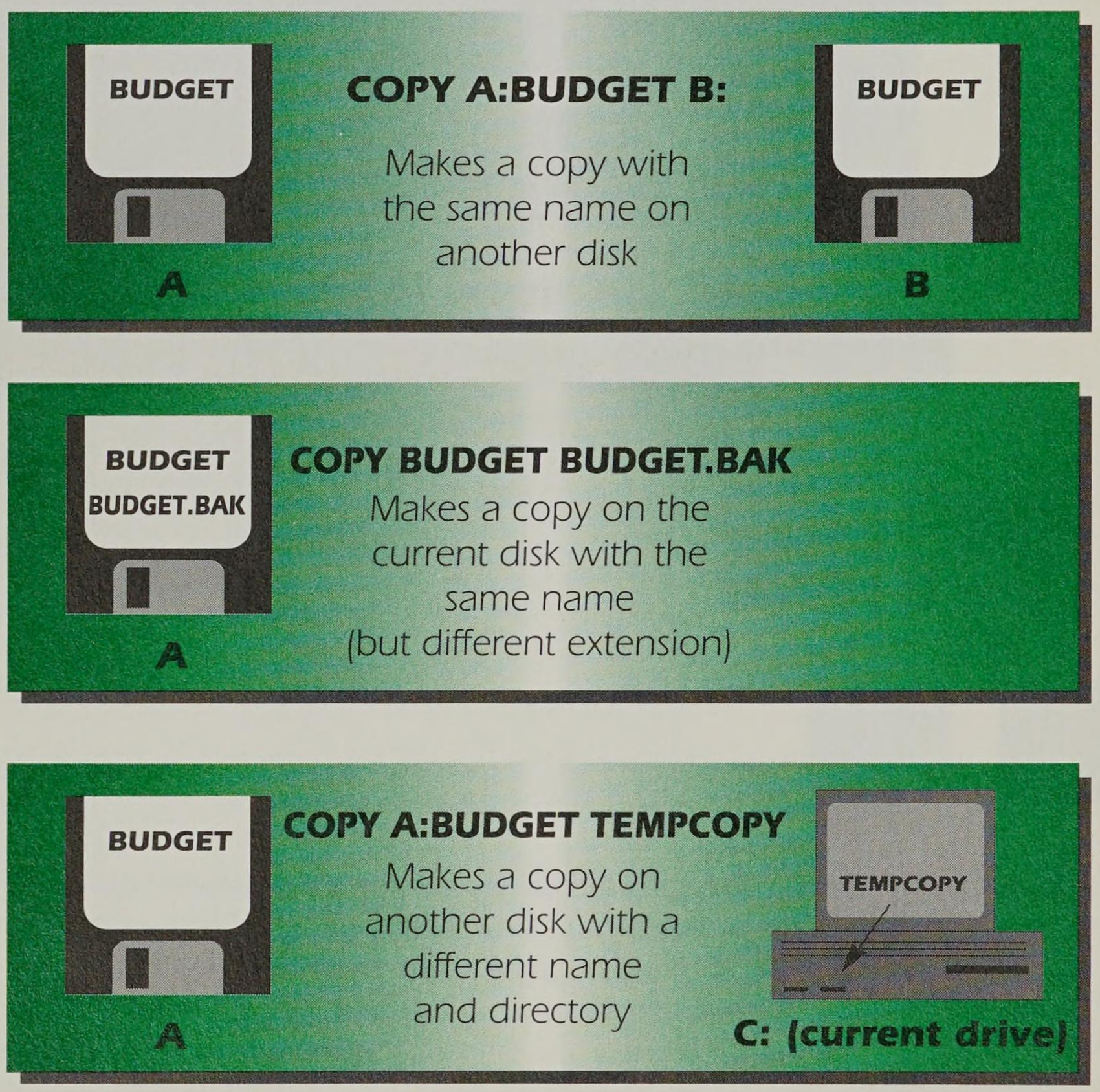


Figure 6-1
Copy options

COPY COMMAND SYNTAX

The internal DOS COPY command is used to copy one or more files from one location to another location.

The syntax for the COPY command is:

source is the location and name of a file or group of files that are to be copied.

destination is the location where the file or group of files will be copied. If you do not enter a destination filename, DOS will use the source filename. If you are copying a file to the same directory, however, the destination file must have a different name.

```
COPY source destination [/v]
```

/v verifies that the new files were copied correctly to the new location. This switch is recommended when you are copying important information. When this switch is used, the COPY procedure takes longer to execute since DOS must compare the source and destination files and note any differences.

If you do not use a destination filename, DOS will use the source filename. If you are copying a file to the same directory, however, the destination file must have a different name. Otherwise, DOS will display the message:

```
File cannot be copied onto itself
```

If you do not enter a location for the source or destination, DOS uses the current directory. To avoid copying files to the wrong location, it is a good practice to indicate both source and destination locations until you become more familiar with this command.

If the source is located on a different drive or a different directory than the current one, you can make the copy in the current location by leaving the destination blank. DOS assumes that you want to use the same name for the destination as was used by the source. This is acceptable since the two files are in different locations.

You might enter COPY A:MEMO if the current location is C:\WPDATA. A file named MEMO will be placed in the current directory.

To use the COPY command:

1. Type **COPY** and then press Spacebar.
2. Type the location and filename of the source file, and then press Spacebar.
3. Type the location and filename of the destination file.
4. Press Enter↵.

NOTE: It is important to specify exactly the drive and the directory to which you are going to copy your file. DOS requires that you enter exactly the paths and the commands.

The COPY command copies one or more files from one location to another and is different from the DISKCOPY command. The DISKCOPY command copies an entire disk to another disk, duplicating all the files as well as the directory structure.

GUIDED TUTORIAL 6-1

You need to make changes to the OFFICE1.TEXT file, but your supervisor wants the original file left unchanged. You need to make a working copy of the file. Follow these steps:

STEP 1 Place your Student disk in drive A.

STEP 2 Type **A:** to move to the Student disk.

STEP 3 Type **COPY OFFICE1.TXT OFFICE1.WRK**.

STEP 4 Press Enter↵.

Since you did not specify a location for the source and destination, DOS looks for the file in the current directory and places the copy in the same directory using the new filename.

STEP 5 Type **DIR/W** to look at the directory and see the current contents, including the new file.

GUIDED TUTORIAL 6-2

You have just finished the tedious task of calculating this pay period's payroll figures. To protect your investment in time spent on this task, you will make a copy of the PAYROLL file.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **COPY A:PAYROLL A:PAYROLL.BAK** and press Enter↵.

This command creates a copy of PAYROLL in your current directory, drive A, adding the .BAK extension to the filename.

STEP 3 Type **DIR/W** and view the contents of the directory, including the new PAYROLL.BAK file.

GUIDED TUTORIAL 6-3

You want to move all of the word-processing files from your root directory into the WP directory to make them easier to find. All of your word-processing files have the .DOC extension. You can use wildcards in copying this group of files.

STEP 1 Type **COPY *.DOC A:\WP**.

STEP 2 Press Enter↵.

When a wildcard is used to copy files, DOS lists the files on the screen as they are being copied, with the total number of files copied displayed after the last file is copied.

GUIDED TUTORIAL 6-4

There is a file on your hard drive that you want to copy to your floppy disk. Follow these steps:

STEP 1 Type **C:**.

STEP 2 Type **CD \DOS**.

STEP 3 Type **COPY FORMAT.COM A:\DOS** and press Enter↵.

STEP 4 Type **DIR A:\DOS** to view the copied files in this directory.

GUIDED TUTORIAL 6-5

You want to make backup copies of the files OFFICE1.TXT and OFFICE2.TXT that are located in your current directory. You will be able to modify these extra copies without altering your original files if you like. You also want to change the file extensions to .BAK to indicate backup copies. To copy all the files in one command, follow these steps:

STEP 1 Type **A:**.

STEP 2 Type **COPY OFFICE?.TXT OFFICE?.BAK**.

STEP 3 Press Enter↵.

STEP 4 Type **DIR/W**.

Remember to use the DIR command to verify the files were copied.

GUIDED TUTORIAL 6-6

Your current drive and directory are A:\DOS. You want to make a copy of the BUDGET.WK1 file in the root directory on drive A and place the copy in the current directory with the same name as the original file in order to try copying a file from one directory to another. You would do this:

STEP 1 Type **CD \DOS**.

STEP 2 Type **COPY A:\BUDGET.WK1** and press Enter↵.

There is no need to specify a destination since DOS assumes that the current location should be used, and the filename of the source file is used when a destination filename is not specified.

STEP 3 Type **DIR** to view the copied file as part of the directory's contents.

ON YOUR OWN EXERCISES

1. Copy the files starting with D with a .COM extension from your C:\DOS directory to your Work disk, giving them the extension .TMP. Display the directory of drive A and do a print screen to verify the results.
2. In one command, copy all the files with a .TXT extension on your Student disk to the A:\WP directory. Display the directory of A:\WP and do a print screen to verify the results.
3. In one command, copy the files TEXT1, TEXT2, and TEXT3 to the A:\DOS directory, and add the extension .BAK. Display the directory of A:\DOS and do a print screen to verify the results.

USING COMP

If you want to check whether two files contain the same data, you can use the COMP command to compare the contents of both files and get a report of any differences. This is useful if you are trying to determine if someone has made unauthorized changes to a file or if you want to verify that a copy you are sending to another colleague exactly matches the copy on your hard disk. If DOS encounters differences, it will let you know. You will need to use another program, however, to pinpoint the differences in the two files or make another copy if you know which file contains the correct version since DOS lets you know only the location of the differences, not how the files differ.

COMMAND SYNTAX SECTION

COMP COMMAND SYNTAX

The COMP command will compare the data in two files byte by byte.

The syntax for the COMP command is:

file1 is the name of the first file.

file2 is the name of the second file

/l displays the line number that contains the difference.

/n followed by a number, compares the number of lines you specify from the beginning of the file.

COMP file1 file2 /a /l /n /c

/a displays the differences as characters.

/c ignores differences caused by the same letter in uppercase and lowercase.

If the two files are identical, the following message is displayed on the screen:

```
Files compare OK
```

However, if DOS determines that the files are not the same length it displays a message to this effect and stops the comparison. If the files are the same length, DOS checks for a difference and displays a message noting the number of bytes from the beginning of the file in hexadecimal format where it occurs. When DOS finds the third difference, it stops the comparison and displays the message:

```
Compare more files (Y/N)?
```

Type **Y** to continue the procedure for other files or **N** to cancel the procedure and press Enter↵.

If you are not comparing files in the current directory, you must specify the file location by providing the drive or directory path. You can compare two files with the same name as long as they are in different directories. You can also use the asterisk and question mark wildcards to select files for comparison.

To compare two files:

1. Type **COMP** and press the Spacebar.
2. Type the first filename and press the Spacebar.
3. Type the second filename and press Enter↵.
4. Type **Y** to compare two more files or **N** to end the comparisons.
5. Press Enter↵.

GUIDED TUTORIAL 6-7

You need to send a copy of an important file to a client overnight. It is a good precaution to check that the copy is identical to the original before mailing the disk. Use the COMP command to insure that the copy operation works correctly. To compare OFFICE1.TXT to OFFICE1.BAK follow these steps:

STEP 1 Insert your Student disk in drive A.

STEP 2 Type **A:** and press Enter↵.

STEP 3 Type **COPY OFFICE1.TXT *.BAK** and press Enter↵.

STEP 4 Type **COMP OFFICE1.TXT OFFICE.BAK** and press Enter↵.

Since the files should are identical there should be no problems with the comparison.

GUIDED TUTORIAL 6-8

You think you have made a backup copy of a file on your Student disk but did not use a name that makes the contents of the file clear. You can use the COMP command to determine whether they are the same, despite their different names. You might want to use several switches for a better look at the comparison. To display the differences as characters and with line numbers, follow these steps to compare MYGRADES.TXT and MYGRADE2.TXT.

STEP 1 Type **COMP MYGRADES.TXT MYGRADE2.TXT /A /L** and press Enter↵.

The difference in the files is in line 2 where file 1 contains paper and file 2 contains ruler. DOS displays the following:

```
Comparing MYGRADES.TXT and MYGRADE2.TXT...
Compare error at LINE 2
file1 = B
file2 = A
Compare error at LINE 3
file1 = A
file2 = B
Compare error at LINE 5
file1 = B
file2 = C

Compare more files (Y/N) ?
```

STEP 2 Type **N** to indicate that you do not want to compare more files and press Enter↵.

ON YOUR OWN EXERCISES

1. Copy PACOLLGE on your Student disk to a file named COLLEGE. Compare the PACOLLGE with COLLEGE .

2. Compare the files TEXT1 and TEXT2 on your Student disk.

USING MOVE

Sometimes you may store files in the wrong directory and wish to rearrange them. Also ,a directory may contain too many files after awhile and you might want to put some of them in another directory. Prior to DOS 6 it was necessary to copy the files to a new directory then delete them from their original location. With DOS 6 you can perform the operation in one step with the MOVE command.

MOVE COMMAND SYNTAX

The MOVE command can save time when you need to relocate files. Its syntax is patterned after the COPY command since you specify both a source and a destination. The only difference between MOVE and COPY is that with COPY the source file remains after the operation and with MOVE it does not.

The syntax of the MOVE command is:

source specifies the name and location of the file or files you want to move.

destination specifies the new location for the file or files. This name does not have to match the source filename if you are only moving one file. If the file-name specified already exists, it is replaced with the contents of the source file.

MOVE source destination

To move a file from one location to another:

1. Type **MOVE** and press Spacebar.
2. Type the location and filename of the source file and press Spacebar.
3. Type the location and filename of the destination file.
4. Press Enter↵.

GUIDED TUTORIAL 6-9

You can move the file PACOLLEGE on your Student disk to a subdirectory, then put it back in the Student disk root directory. Follow these steps:

STEP 1 Place the Student disk in drive A.

STEP 2 Type **MOVE A:PACOLLGE A:\WP\PACOLLGE** and press Enter↵.

STEP 3 Type **DIR A:\WP**: and press Enter↵ again .

You can see that the file is now in the subdirectory.

STEP 4 Type **MOVE A:\WP\PACOLLGE A:\PACOLLGE** and press Enter↵.

This puts the file back in the root directory.

STEP 5 Type **DIR A:/W**.

You can see that the file is now in the root directory again.

ON YOUR OWN EXERCISES

1. Move the files TEXT1, TEXT2, and TEXT3 from your Student disk to the root directory of your hard disk, then put them back on the Student disk.

2. Create a file on your hard disk that contains the days of the week and name it DAYS7. Move this file to your Work disk.

USING XCOPY

DOS provides XCOPY, an external command that duplicates files but has more options than the COPY command. The difference between COPY and XCOPY is that XCOPY has many options that allow you to control precisely the data that is copied through the use of switches. Some switches allow you to select files that meet certain user criteria. Other switches allow you to copy entire subdirectories with files in them to another location. XCOPY, however, does not affect hidden and system files.

XCOPY COMMAND SYNTAX

Depending on the switches entered, a single XCOPY command can take the place of several COPY commands to copy a number of files. XCOPY is an external DOS command.

The syntax for the XCOPY command is:

pathname1 specifies the source file or files that are to be copied. If a drive or directory location is not entered, DOS looks for the file or files on the current drive and current directory.

pathname2 specifies the destination of where the file or files are to be copied. If the current drive and directory are the source location, you must enter different filenames for the destination.

/m copies source files that contain the archive attribute, as does switch /a. However, the /m switch removes the archive attribute from the copied files.

/p prompts you about each file. Enter either **Y** to copy the file and then display the next file or **N** to not copy this file and then display the next file.

XCOPY pathname1 [pathname2][/a][/d:date][/e][/m][/p][/s][/v][/w]

/a copies source files that contain the archive attribute. The archive attribute is not removed from the copied files.

/d:date copies source files after the date you entered. The date format must match the format used by the DATE command.

/e copies empty subdirectories when you use the /s switch by creating the subdirectory in the destination location. The /s switch, by itself, does not include empty directories in the copy.

/s copies subdirectories and their files to a new location. If a subdirectory does not exist in the destination location, one is created to store copies of its source files. Empty subdirectories are not copied.

/v verifies each file as it is copied to the destination location to make sure that the source and destination files are identical.

/w waits before copying files and displays the message:

Press any key to begin copying file(s).

Press a key to begin the copy procedure when you are ready.

To use the XCOPY command:

1. Type **XCOPY** and then press Spacebar.
2. Type the source location, and then press Spacebar.
3. Type the destination location.
4. Press Enter↵.

GUIDED TUTORIAL 6-10

There are a number of text files mixed in with other files in the DOS directory that you want to copy to your Student disk in drive A.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **XCOPY C:\DOS A: /P** and press Enter↵.

DOS will list each file in the \DOS directory, one at a time.

STEP 3 Type **Y** when prompted to copy files with the .BAS extension. Type **N** in response to a prompt for any other file.

STEP 4 Type **DIR A:/W** to view the copied files.

GUIDED TUTORIAL 6-11

You want to copy the files in the \DOS directory on drive C with file creation dates after 6/1/93 to a new directory on your Student disk in drive A.

STEP 1 Type **XCOPY C:\DOS A:\TEMP\ /D:06-01-93** and press Enter↵.

DOS creates a new directory called \TEMP on your Student disk, then selects the files with a file date greater than 6/1/93 and copies them to this directory.

STEP 2 Type **DIR A:\TEMP** and press Enter↵.

GUIDED TUTORIAL 6-12

You want to copy files in several related directories from your hard drive to your floppy disk. For this practice, the directories you create will not contain files.

STEP 1 Place your Work disk in drive A.

STEP 2 Type **MD C:\KINGDOM** and press Enter↵.

STEP 3 Type **MD C:\KINGDOM\DUCHY** and press Enter↵.

STEP 4 Type **MD C:\KINGDOM\EARLDOM** and press Enter↵.

STEP 5 Type **MD C:\KINGDOM\BARONY** and press Enter↵.

STEP 6 Type **MD C:\KINGDOM\COUNTY** and press Enter↵.

Now you have created the directory structure you want to backup to a floppy disk.

STEP 7 Type **XCOPY C:\KINGDOM A:\TEMP /S /E** and press Enter↵.

Because your directories are empty, DOS will display this message:

```
File not found - ????????.???
        0 File(s) copied
```

STEP 8 Type **DIR A:\TEMP**

You will see that the four subdirectories of the C:\KINGDOM directory have all been copied to this subdirectory. Had they contained files, those files would not be backed up on your student disk.

STEP 9 Type **RD C:\KINGDOM\COUNTY** and press Enter↵.

STEP 10 Type **RD C:\KINGDOM\BARONY** and press Enter↵.

STEP 11 Type **RD C:\KINGDOM\EARLDOM** and press Enter↵.

STEP 12 Type **RD C:\KINGDOM\DUCHY** and press Enter↵.

STEP 13 Type **RD C:\KINGDOM** and press Enter↵.

ON YOUR OWN EXERCISES

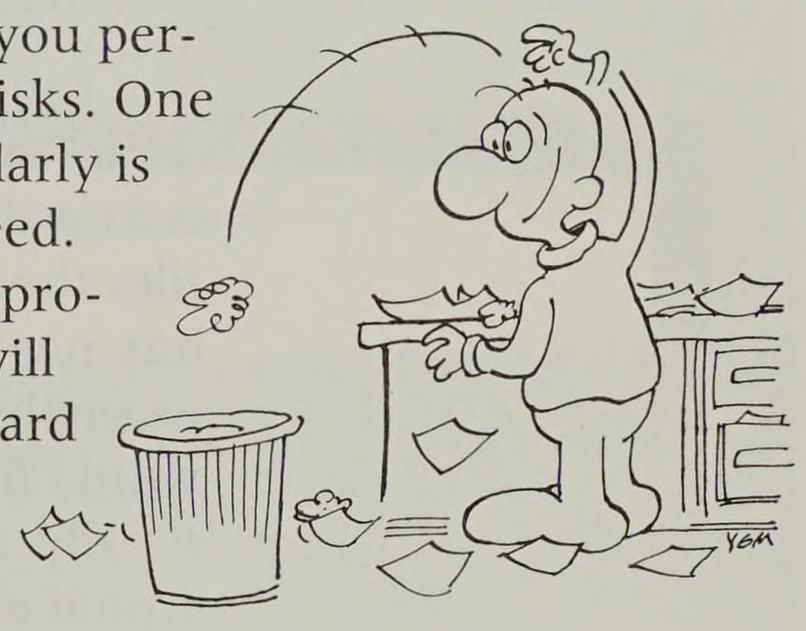
1. Create the three subdirectories: \MEMOS, \LETTERS, and \REPORTS in the \WP directory on your Student disk. Copy the contents of the \WP directory to the \TEMP directory, including these empty subdirectories.

2. Copy only the files in the root directory on your Student disk that are dated after 7-4-93 to the \TEMP directory.

3. Copy the contents of the \DOS directory on your hard drive to the Student disk, using the switch which prompts you about copying each file. Only copy files that begin with U and have the .EXE extension.

USING DELETE

DOS provides the tools for helping you perform housekeeping tasks on your disks. One task that should be performed regularly is to delete files that you no longer need. This purging of unneeded data will provide more space for new files and will improve the performance of your hard disk. The ERASE command is the same as the DEL command.



COMMAND SYNTAX SECTION

DELETE COMMAND SYNTAX

The DEL or ERASE command allows you to delete one or more files. Immediately after using the DEL or ERASE command, the file still occupies its original space. The file's data is not erased, but the file is not accessible since the first letter of the filename is changed to a ?.

If you mistakenly delete a file, you must recover it before adding or changing information on the disk. The space occupied by the deleted file will be used when new information is written to the disk. We explain the procedure to recover a deleted file later in the UNDELETE command.

The syntax for the DEL and ERASE commands is:

drive/path/filename specifies the location for the file or group of files that are to be deleted.

/p has DOS prompt you about each file so you can enter either Y to delete the file and then display the next file or N not to delete this file and then display the next file.

```
DEL [drive:][path]filename [/p]
ERASE [drive:][path]filename [/p]
```

If the file contains an extension, as in INCOME.STM, be sure to include .STM in the filename; otherwise, DOS will not locate the INCOME.STM file and, worse yet, will delete the file INCOME that is stored in the same location.

You can use the ? or * wildcards to select a group of files for deletion. However, a good practice before deleting files with a wildcard is to use the DIR command with the same wildcards to display the files the wildcard selects. Review the contents of the list to be sure any needed files will not be included in the delete procedure. For example, if you wanted to delete all files that begin with SJT, you would first use DIR to find all these files, then review that list. Finally, assuming that only the files to delete were displayed, you would enter:

DEL SJT*.*

Another option you can use is to include the /p switch in the command. For example, if you want to delete all files in the root directory of your hard drive that start with SJT, you could enter the command:

DEL SJT*.* /p

Then DOS would display the a message prompting you whether you wanted to delete the file or not, as shown here:

```
filename, Delete (Y/N)?
```

If you respond Y, the file is deleted, and the next file is displayed. If you respond N, the file is not deleted, and the next file is displayed.

To delete a file from your disk:

1. Type **DEL** and press Spacebar.
2. Type the name of the file that you want to delete and press Enter↵.

GUIDED TUTORIAL 6-13

You want to clear the contents of the \TEMP directory on your Student disk that you have used earlier in this chapter, in order to clear space on your disk for future use. You can use the * wildcard to do this.

STEP 1 Insert your Student disk in drive A.

STEP 2 Type **DEL A:\TEMP*.*** and press Enter↵.

The following message is displayed:

```
All files in directory will be deleted!
Are you sure (Y/N)?
```

STEP 3 Type **Y** to delete the files.

STEP 4 Type **DIR A:\TEMP**.

NOTE: DEL *.* should be used only when you are absolutely sure that you will not need any of the files in a certain directory. Remember to use the DIR command to check the directory listing before you delete.

GUIDED TUTORIAL 6-14

You want to delete a copy you made of a file.

STEP 1 Type **COPY A:PHILSPHY.TXT A:\WP**.

STEP 2 Type **DIR A:\WP/W**.

STEP 3 Type **DEL A:\WP\PHILSPHY.TXT** and press Enter↵.

STEP 4 Type **DIR A:\WP/W**.

GUIDED TUTORIAL 6-15

You have decided to delete all the files from your Student disk's root directory that contain the file extension .EXE since you no longer need these files. You can use the * wildcard to delete all these files.

STEP 1 Type **DEL A:*.EXE** and press Enter↵.

STEP 2 Type **DIR A:*.EXE**.

ON YOUR OWN EXERCISES

1. Copy the .TXT files from the root directory of your Student disk to the 123 directory. Delete the copied files that begin with the letter M. Then practice deleting files of your choice using the prompting (/p) switch.

2. Copy the files that begin with TEXT from the root directory of the Student disk to the PARADOX directory. Then delete all of the files in the Paradox directory in one command.

USING UNDELETE

Mistakes are inevitable, even for advanced DOS users. Therefore, DOS includes a few safety-net commands that allow you to restore data in certain situations. The UNDELETE command restores files that were deleted with the DEL or ERASE command.

When a file is deleted, DOS does not erase the data from the disk; rather, it replaces the first character of the filename with a ?. This indicates to DOS that this is a deleted file. This space is now available to store other data. The external UNDELETE command allows you to restore the first character of the filename.

NOTE: It is important that you use UNDELETE as soon as you realize the mistake. If another file is written over the space on the disk that contained the deleted file, it will not be possible to undelete the file.

UNDELETE COMMAND SYNTAX

The UNDELETE command can recreate a deleted file or a group of files if the space once occupied by these files has not been written over to store other data. You want to execute this command immediately, because there are many ways for that space of the disk to be written over. For instance, some DOS commands create temporary files that can use space that is now occupied by a deleted file.

The syntax for the UNDELETE command is:

drive/path/filename specifies the location of the file or group of files that are to be undeleted. If a filename is not entered, DOS will attempt to recover all the deleted information in that directory.

/list provides a list of deleted files that can be recovered but does not do so.

/dos recovers files by using the information in the file allocation table and directory rather than the delete tracking file, if it exists. DOS displays each file's filename, size, date, time, attributes, and when it was deleted. DOS then prompts if you want to recover the deleted file.

UNDELETE [drive/path/filename][/list][/dt] [/dos][/all]

/dt recovers files listed in the deletion tracking file (PCTRACKR.DEL) created by the MIRROR command. This file tracks deleted files and where they are located. MIRROR is a TSR (terminate-and- stay-resident) program that must be loaded at the beginning of a DOS session and is unloaded when the computer is reset or turned off.

/all recovers all recoverable deleted files without the confirmation procedure. The deletion tracking file is used if it exists. Otherwise, the file allocation table and directory are used.

The UNDELETE command has several limitations:

1. You cannot undelete a file if new data has been written over it.
2. You cannot recover a directory that has been deleted with the RD command.
3. You cannot recover a file that is located in a deleted directory.

NOTE: Some application programs allow you to delete files from within the programs through a special delete feature. These files can also be recovered by using the UNDELETE command at the DOS prompt.

To undelete a file that has not been overwritten with other data:

1. Type **UNDELETE** and press Spacebar.
2. Type the name of the file that you accidentally deleted.
3. Type **Y** when prompted to undelete the file.
4. Type the first letter of the original filename when prompted.

GUIDED TUTORIAL 6-16

You can undelete files that you mistakenly delete from your Student disk.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **A:**.

The root directory of the Student disk is now the current directory.

STEP 3 Type **DEL MYGRADE2.TXT** and press Enter↵.

STEP 4 Type **DIR**.

Notice that the MYGRADE2.TXT file no longer appears in the root directory.

STEP 5 Type **UNDELETE MYGRADE2.TXT** and press Enter↵.

DOS now attempts to recover the deleted file.

STEP 6 When DOS prompts if you want to undelete the file, type **Y**.

STEP 7 When DOS prompts you for the first letter of the file's name, type **M**.

STEP 8 Type **DIR**.

Notice that the MYGRADE2.TXT file now appears in the root directory again.

USING ATTRIB

Each file can have up to four different attributes that tell you something about the file—that is, whether it is a read-only file (one that cannot be changed), a hidden file (one that does not appear in a DIR display), a system file, or a file that has not been archived or backed up. You can use these attributes to prevent unauthorized changes to a file as well as to eliminate the name of the file from directory listings if you would prefer that it not appear. You can change file attributes with the external ATTRIB command.

ATTRIB COMMAND SYNTAX

These attributes can be displayed, added to, or changed in the file by using the DOS external ATTRIB command. The attributes of each file are stored in the subdirectory or directory. The information is stored in an attribute bit. It contains the name, size, date last modified, and time last modified for each file in the directory.

The syntax for the ATTRIB command is:

+r sets the read-only attribute for the file, which is protected from being deleted by the DEL command and being modified with other programs. **-r** clears this attribute.

+a sets the archive attribute for the file, indicating that it has not been backed up. This attribute is set for all files by default. **-a** clears the archive file attribute.

+h sets the hidden attribute for the file. The file is protected from being deleted by the DEL command and will not appear in a display produced by the DIR command unless the /a or /a:h switch is used. . Hidden files are listed when ATTRIB is used by itself. **-h** clears the hidden file attribute.

ATTRIB [+|-r][+|-a][+|-s][+|-h][drive:/path/filename][/s]

+s sets the system attribute for the file. **-s** clears the system file attribute.

drive/path/filename specifies the files to list or change the attributes of. If only the command name (ATTRIB) is entered, DOS displays all attributes of all files in the current directory.

/s instructs DOS to use all directories on the current drive.

To change the attribute for a file:

1. Type **ATTRIB** and press Spacebar.
2. Type the attribute you want to change and press Spacebar.
3. Type the filename you want the change to affect and press Enter↵.

GUIDED TUTORIAL 6-17

You want to display the file attributes of the BACKPACK.TXT file on the Student disk to see if the archive attribute bit is set on.

STEP 1 Place the Student disk in drive A.

STEP 2 Type **A:**.

The root directory of the Student disk is now the active directory.

STEP 3 Type **ATTRIB BACKPACK.TXT** and press Enter↵.

DOS displays a message like this:

```
A            A:\BACKPACK.TXT
```

Notice that this file has only the A attribute, which means that the archive attribute is set.

GUIDED TUTORIAL 6-18

You can remove the archive attribute from the BACKPACK.TXT file so that DOS does not recognize that it has not been backed up since the last time you changed the file.

STEP 1 Type **ATTRIB -A BACKPACK.TXT** and press Enter↵.

STEP 2 Type **ATTRIB BACKPACK.TXT**.

DOS displays the message:

```
A:\BACKPACK.TXT
```

Notice that no attributes are set for this file.

GUIDED TUTORIAL 6-19

You want to change the PENN.TXT file to a hidden file so that others that borrow your Student disk will not even realize that the file is on the disk.

STEP 1 Type **ATTRIB +H PENN.TXT** and press Enter↵.

STEP 2 Type **DIR** .

The PENN.TXT file does not display.

GUIDED TUTORIAL 6-20

Now you want to return PENN.TXT to its original state and remove the hidden file attribute.

STEP 1 Type **ATTRIB -H PENN.TXT** and press Enter↵.

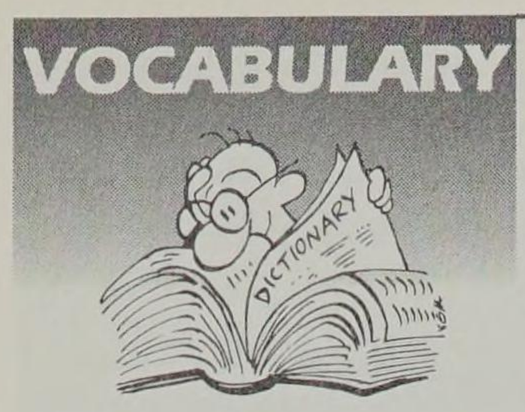
STEP 2 Type **DIR**.

Notice that the PENN.TXT file is once again included in the directory display.

ON YOUR OWN EXERCISES

1. Display all attributes of all files on your Student disk. You will notice that all files have been set for archive by the A in the left column.

2. Using any Work disk that contains files, practice setting files to contain read-only, hidden, and system file attributes. Then practice removing the file attributes.



Attribute bit

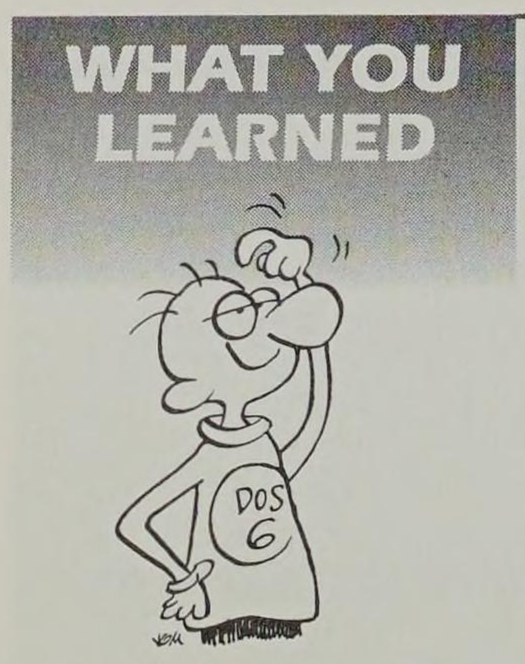
Stores the attributes of each file and contains the name, size, date last modified, and time last modified for each file in the directory.

Destination file

The new location of a file after it has been copied, deleted, or modified by a DOS command.

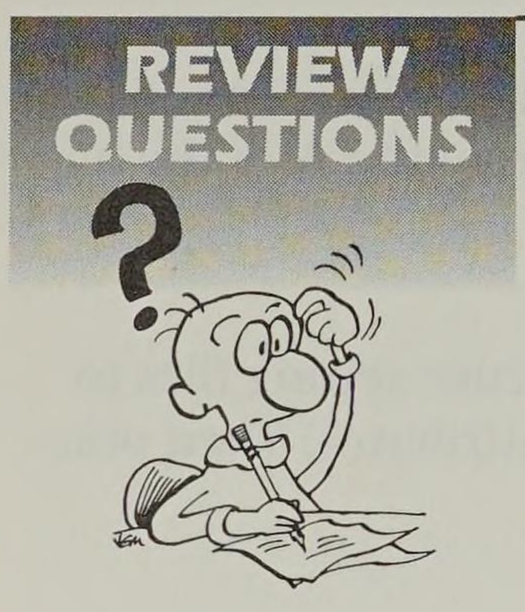
Source file

The original location of a file before it is copied, deleted, or modified by a DOS command.



In this chapter you learned about many commands that can help you manage your files. The specific tasks you learned how to accomplish were:

- How to copy and move files.
- How to compare two files to insure that they are identical.
- How to change file attributes.
- How to delete and restore files.



Answer each of the following with *true* or *false*.

_____ **1.** You can use the XCOPY command to provide additional control over the copy process.

_____ **2.** To compare two files on different disks to insure that they are identical, use DISKCOMP.

_____ **3.** ATTRIB +r lets you set a file to read-only and prevent unauthorized changes.

_____ **4.** You can use ATTRIB -h to hide a file and not have it appear in a directory listing.

_____ **5.** UNDELETE always lets you restore a file that has been deleted from your disk, as it uses the archived copied of the file to restore it.

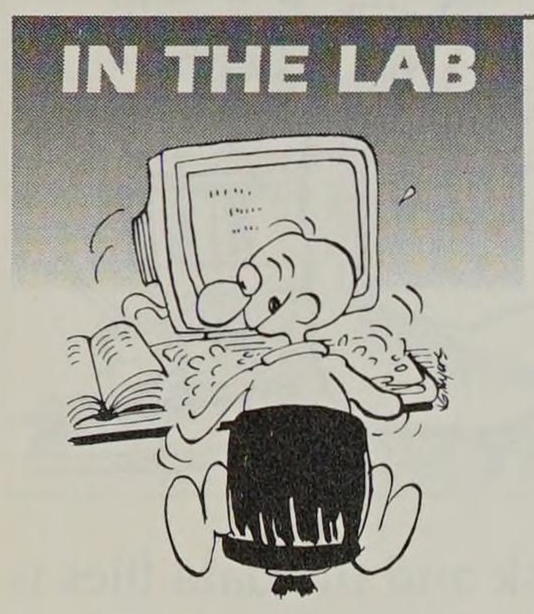
_____ **6.** DEL and ERASE perform the same function.

_____ **7.** The COMP command computes the amount of space needed to store a file.

_____ **8.** COPY A:*.TMP B:*.BAT will copy all the files on drive A to drive B using the same filename but a different filename extension.

_____ **9.** You cannot use the * wildcard with XCOPY.

_____ **10.** The attribute bit keeps track of errors in DOS commands and displays a message indicating the problem.



1. Copy the files MONTH1_6.TXT and MONTH712.TXT from the Student disk to a Work disk, renaming the files with a .BAK extension.

2. Using the MONTH1_6.BAK file on the Work disk, copy the file to the new name MONTHCOM. Perform a file comparison of MONTH1_6.BAK and MONTHCOM.

3. Create a directory called TEMP on your Work disk. In one command, copy the files that contain a .BAT extension to the new directory TEMP. Remove the archive attribute from the files that are copied to. Display the attributes of the files contained in the directory TEMP.

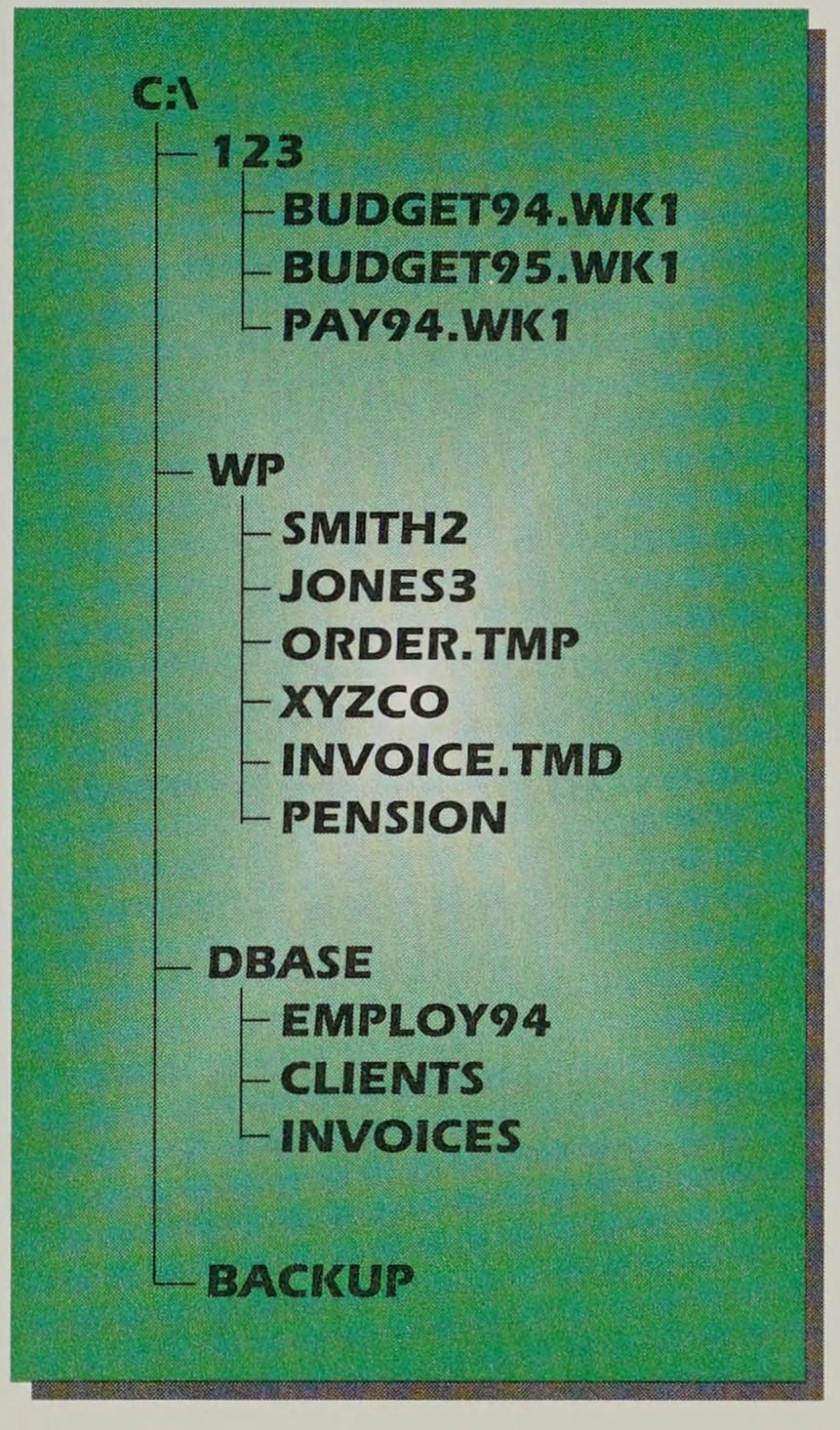
4. Using the .BAT files from Step 3, delete them in one command, pausing to display each file before it is deleted. Immediately after deleting the files, restore them to the Work disk. Be sure to delete the files that you just copied into the new directory.

5. Using the files MONTH1_6.BAK and MONTH712.BAK from Step 1, change the file attributes to read-only files. Display the file attributes on the screen.

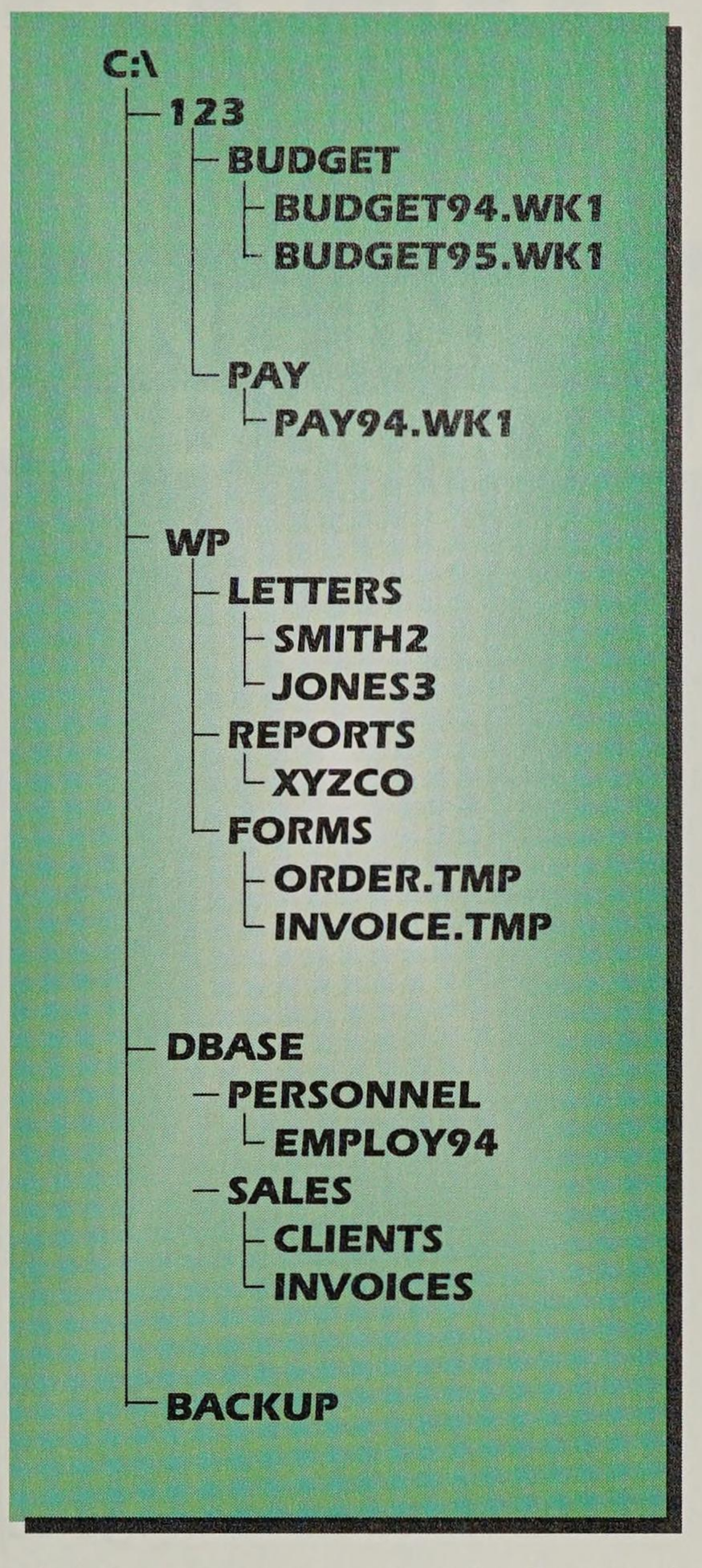
THINKING ON YOUR FEET

While you were on vacation, your new computer arrived and a co-worker unfamiliar with computers used it for a few days. Since your co-worker did not know how to use directories effectively, when you come back, you find that the files on your hard disk are not very well organized.

The current directory structure of your hard disk and the data files is as shown below:



You decide that your computer needs a new directory structure and design like the one shown below.



When you came back, your co-worker had copied each file from your system to his so he could continue working with them. Seeing you reorganizing your files, he asks you to record the commands you are using to create the new directory structure and copy the files to the correct directories so that he can use the same steps to reorganize his system. When you record these steps, include the command you use to insure that he cannot modify the files containing forms that have a filename extension of .TMP.

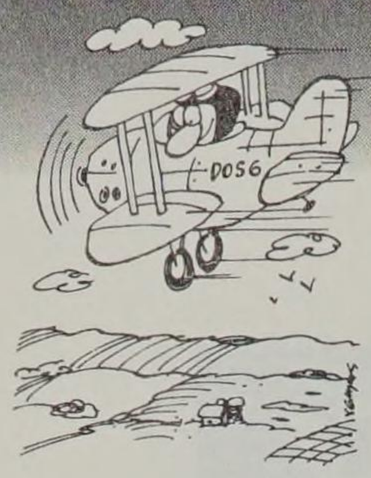
CHAPTER 7

REDIRECTING INPUT/ OUTPUT AND SORTING

After completing this chapter, you will be able to:

- Explain how DOS uses device names for input and output.
- Redirect input and output.
- Limit the output display to one screen at a time.
- Locate specific data in a text file.
- Reorder the lines in a text file.
- Direct the output of one command to the input of another.

OVERVIEW



Up to now, you have been using the DOS default devices for input and output. Input is the information that you give your computer to work with, such as the information you type at the keyboard. Output is the information that the computer gives you, either on the screen or in printouts. Devices are hardware components that are part of your computer system, such as the monitor, the keyboard, or the printer. Device names are the standard names that DOS uses to refer to each component.

The default device setting tells DOS where to locate input information and where to direct output information. DOS normally expects to receive input information from the keyboard. Likewise, it directs the output of information to the screen or to a filename you enter. The keyboard and screen default devices can be changed to redirect the input and output of information from or to another device.

There are four device names commonly used in DOS. Table 7-1 lists the device names and what each represents.

DEVICE	REPRESENTS
CON	Console, which is the computer's keyboard and screen.
AUX/COM1/COM2/COM3/COM4	Serial ports, which are connected to a serial printer or modem for communications to your computer.
PRN/LPT1/LPT2/LPT3	Parallel ports, which are connected to a parallel printer to your computer.
NUL	A dummy location used by DOS to discard output information.

Table 7-1
Device names

DOS gives you added flexibility when directing output through the use of filter commands. They allow you to sort data stored in a text file, control the display of output on the screen, and quickly locate specific data in a text file. DOS also provides the use of pipes where you can send output from one command to the input of another command.

REDIRECTING INPUT AND OUTPUT

DOS sends input and output for its commands to a set location called a device. The default device for input and output is CON (console), where DOS receives input from the keyboard and sends output to the screen. You have been using the console throughout this book for entering commands and viewing the command

responses. You can override this device for a command by entering a redirection symbol. Redirection symbols direct the input and output for a command to or from another file or device.

DOS supports three redirection symbols. Table 7-2 lists the symbols and what action they take.

SYMBOL	ACTION TAKEN
>	Sends the output of a command to a file or device.
<	Takes the input needed for a command from a file instead of the keyboard.
>>	Appends output from a command to the end of a file but does not delete the data already contained in the file.

Table 7-2
Redirection symbols

REDIRECTING OUTPUT

The greater-than symbol (>) redirects output to another device. It is often used to send a copy of the output from a command to a file or to the printer. The new output locations allow you to better share the output of commands with others in your office as well as to keep a permanent copy for your use at a later time. You can redirect the output from most DOS commands. The text that is redirected to an output file can be edited with your word processing package.

To direct the output of a directory display of the disk in drive A to the file FILELIST:

1. Type **DIR A: >FILELIST** and press Enter↵.

DOS redirects the output of the directory display to FILELIST on your current directory instead of displaying the disk contents on the screen. If FILELIST does not exist, DOS creates the file for you. If the file already existed, DOS would have replaced the contents with the new directory display information.

To redirect the directory display to your printer:

1. Type **DIR A: >PRN** and press Enter↵.

You can also add output information from a command to the end of a file that already contains data by using the double greater-than

sign (>>). For instance, if the file FILELIST contains directory listings of a group of disks, you can add another directory display to the file.

To add another directory display to the file:

1. Type **DIR A: >>FILELIST** and press Enter↵.

A list of the directory contents for the disk in drive A will be added to the end of the data in FILELIST.

REDIRECTING INPUT

The less-than symbol (<) directs the input to come from a file rather than the keyboard. This symbol is often used with the filter commands MORE, FIND, and SORT, which affect output and are covered later in this chapter. For example, you can instruct DOS to take the input for the FIND command from the file PAYROLL to locate the string "Payroll records for 1993." If DOS locates the line that contains the text string in the file PAYROLL, DOS displays it on the screen. We explain these commands later in this chapter.

GUIDED TUTORIAL 7-1

You may want to produce a list of all the subdirectories and files on your Student disk using the TREE command and redirecting the output to a file stored on your hard drive. To create the file, follow these steps:

STEP 1 Place your Student disk in drive A.

STEP 2 Type **A:**.

The Student disk's root directory is now the current directory.

STEP 3 Type **TREE A: >FILELIST /f** and press Enter↵.

DOS redirects the TREE display to the file FILELIST in your current directory.

STEP 4 Type **TYPE FILELIST**.

You can also create a printout of the file FILELIST by redirecting the TYPE command to the printer.

STEP 5 Type **TYPE FILELIST >PRN**.

This command sends the output of the TYPE command to the printer so you have a hard copy of the output.

GUIDED TUTORIAL 7-2

You want to add the TREE listing from your hard drive to the file FILELIST.

STEP 1 Type **TREE C: >>FILELIST** and press Enter↵.

This adds the directory structure of your hard disk to the end of the FILELIST directory.

STEP 2 Type **TYPE FILELIST**.

ON YOUR OWN EXERCISES

1. Send a directory display of your Student disk to your printer.

2. Put a directory listing of your hard drive that includes the contents of the subdirectories in the file named DIR_ALL.TXT on your Student disk. Send of copy of this file to the printer.

USING MORE

MORE is a filter command, which means that it is used with other DOS commands to affect their output. For example, when using DIR, TREE, or TYPE, you have probably found times when the output from the command needed more than one screen to display. The command's output scrolled past so quickly that you could not read it. With the MORE command, you can display the output of the command on the screen, one screen at a time. This command is often used with other DOS commands that display data on the screen but do not have a pause switch. Some commands combined with MORE are TREE, TYPE, and SORT.

MORE COMMAND SYNTAX

The MORE filter command limits the output display to one screen at a time. There are two ways to use this command. It displays the contents of a file, one screen at a time. It also can be used along with another command that does not have a pause switch when it displays information on the screen.

The syntax for the MORE command is:

[drive][path] is the location of the file that is supplying the input for the MORE command.

filename is the file that is supplying the input you want to display with the MORE command.

MORE < [drive][path]filename

DOS command supplies the output to display one screen at a time.

| is the pipe symbol that tells DOS the output is being used with another command and is being directed by the MORE command.

DOS command | MORE

To use the MORE command by itself :

1. Type **MORE < filename.**

   where "filename" is the name of the text file that you would like to display one screen at a time.

When used with another command, MORE follows the command entry and is separated from the command by a split vertical bar .

To use more with another command:

1. Type **TYPE filename |MORE.**

GUIDED TUTORIAL 7-3

You have a file of addresses of people you write to often. This file, ADDRESS.TXT on your Student disk, is a long text file. While looking for the address of Marian Holbinko, you can view the file on your screen using the MORE command.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **TYPE A:\ADDRESS.TXT** and press Enter↵.

You cannot find any one address because the file scrolls past too quickly.

STEP 3 Type **MORE < A:\ADDRESS.TXT** and press Enter↵.

View the first screen. DOS displays — More — at the bottom of the first screen

STEP 4 Press any key to view the remaining screens.

GUIDED TUTORIAL 7-4

You can view the file again one screen at a time by combining TYPE with MORE.

STEP 1 Type **TYPE A:ADDRESS.TXT | MORE** and press Enter↵.

View the contents of the first screen.

STEP 2 Press any key to see the next screen.

GUIDED TUTORIAL 7-5

You want to review the contents of your Student disk on the screen.

STEP 1 Type **TREE A: /F | MORE** and press Enter↵.

Adding the MORE command gives you control of the display so that you can view each screen one at a time.

STEP 2 Press any key to continue the TREE display.

ON YOUR OWN EXERCISES

1. Display the contents of the file TEXT3 on your Student disk using the MORE command.

2. List the root directory of your Student disk using the MORE command in case there is more than one screen.

USING FIND

The FIND command provides a search capability that locates specific data in one or more files. You can use this command to locate a specific entry in a text file rather than printing it and scanning it visually.

FIND COMMAND SYNTAX

With the external FIND command, you instruct DOS to search for a specified string of data. When DOS locates the match, the output is displayed on the screen unless you direct it to another device or file.

The syntax for the FIND command is:

/v *displays the lines that do not contain the specified string.*

/i *locates the string whether it contains uppercase or lowercase letters.*

FIND [/v] [/c] [/n] [/i] "string" [drive][path]filename

/c *displays the number of lines in each file that contain the string, and cannot be used with the switch /n.*

"string" *specifies the character(s) you are searching for.*

/n *displays the line number before the line that contains the string, and cannot be used with the switch /c.*

[drive][path]filename *specifies which files to search for the specified string. Separate multiple filenames with a space. You cannot use wildcards with multiple files.*

To find a string of text in a file:

1. Type **Find** and press Spacebar.
2. Type the characters you are searching for within quotes and press Spacebar.
3. Type the filename to check and press Enter↵.

GUIDED TUTORIAL 7-6

You are copying a file to a friend's computer, but are not sure that you have the correct file. You can use FIND to locate a string you remember being in the file you want.

STEP 1 Insert your Student disk in drive A and type **A:**.

STEP 2 Type **FIND "Ability is nothing without opportunity." A:TEXT1** and press Enter↵. Make sure you include the period and double check your spelling!

DOS displays the following output on your screen:

```
---------- A:TEXT1
Ability is nothing without opportunity.
```

GUIDED TUTORIAL 7-7

You know that there are letters from and to Carol Smith saved on your Student disk. Letters to Carol Smith will have her name near the beginning, while letters from her will have her name near the end. You can use FIND to determine quickly if a file is to her or from her by locating her name and displaying the number of the line it is on with the /n switch.

STEP 1 Type **FIND /n "Smith" LETTER1.TXT** and press Enter↵.

DOS displays each line in the file that contains a space with the line number in brackets, as in [1]. Line 17 is the only line that contains the name Smith in the letter, so this is one she wrote.

GUIDED TUTORIAL 7-8

You want to locate quickly the one TEXT file out of the many on your Student disk that contains the text "We are all alike on the inside."

STEP 1 Type **FIND "We are all alike on the inside" A:TEXT1 A:TEXT2 A:TEXT3** and press Enter↵.

DOS displays the following output on your screen:

```
---------- A:TEXT1
We are all alike on the inside
---------- A:TEXT2
---------- A:TEXT3
```

GUIDED TUTORIAL 7-9

You want to find those files on your Student disk that were created on 2-24-93, follow these steps:

STEP 1 Type **DIR A: I FIND "2-24-93"** and press Enter↵.

DOS displays all directories and files in directory format that contain this date.

ON YOUR OWN EXERCISES

1. Locate the text "Bucknell University" in the files PA2 and PACOLLGE.

2. Locate "opportunity" by searching the files TEXT1, TEXT2, and TEXT3.

3. Locate the text "Overnight" in the file BACKPACK.TXT. Look for "Overnight" in BACKPACK.TXT again without distinguishing between upper- and lowercase letters.

USING SORT

After creating a text file, you may decide that you need to arrange the data in a certain order. For example, you may want to sort a list of purchases by item number or price. When the SORT command is used without switches, it sorts the data in ascending order. The SORT command is an external DOS command. Two switches give you different options for sequencing the data.

SORT COMMAND SYNTAX

The SORT command allows you to rearrange the order of lines in a text file. DOS treats each line as a single record or unit of information in the file. Records contain all the information stored on a single thing. Columns are numbered starting with 1 for the first column. You could have employee records with information such as name, salary and social security number or records about trees with information such as average height, maturity age, bark type, and ideal growing conditions. The first column contains the first character or space on a line, and so on. The SORT command does not differentiate between uppercase and lowercase letters. It can sort a file as large as 64K.

The syntax for the SORT command is:

/r sorts the lines in reverse order.

drive1/path1/filename1 is the location of the file that contains the data you want to sort.

SORT [/r] [/+n] [<] [drive1][path1]filename1 [> [drive2][path2]filename2]

/+n sorts the lines according to the column number entered. The default is column 1.

drive2/path2/filename2 is the location of the file that will contain the sorted output.

DOS command is the DOS command whose output is the data you want sorted.

[DOS command |] SORT [/r] [/+n][> [drive2][path2]filename2]

To use the command to sort a file by the first character in the file:

1. Type **SORT < filename**.

   DOS will display the sorted file.

GUIDED TUTORIAL 7-10

You need to sort the needed supplies entered in the OFFICE1.TXT file before submitting the list to your office manager.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **A:**.

The root directory of the Student disk is now the active directory.

STEP 3 Type **TYPE OFFICE1.TXT**.

Notice that the entries in the file are not in alphabetical order.

STEP 4 Type **SORT < A:OFFICE1.TXT** and press Enter↵.

DOS displays the output in alphabetical order according to column 1 on your screen with the first line as an empty line and the second line containing "#2 Pencils."

GUIDED TUTORIAL 7-11

You want to sort the file CARS.TXT on your Student disk before submitting the list of cars to an insurer.

STEP 1 Type **TYPE CARS.TXT**.

Notice the order the car names are in.

STEP 2 Type **SORT < A:CARS.TXT** and press Enter↵.

DOS displays the output in alphabetical order according to column 1 on your screen with the first record as "Benz Carriage" 1885.

STEP 3 Type **SORT /R < A:CARS.TXT** and press Enter↵.

DOS sorts the file CARS.TXT on your Student disk in reverse order. The first record displayed is Stutz Bearcat 1914.

GUIDED TUTORIAL 7-12

You can use the SORT command to organize the Heisman Trophy winners listed in the file TEXT2 on the Student disk by their colleges. The college names start in column 30.

STEP 1 Type **TYPE TEXT2**.

Notice the order of the colleges for each Heisman Trophy winner.

STEP 2 Type **SORT /+30 < A:TEXT2** and press Enter↵.

ON YOUR OWN EXERCISES

1. Sort the data in file FLOWERS.TXT on your Student disk in ascending order according to column 3, pausing after the first screen of data. Notice that the flower names have been rearranged throughout the four categories.

2. Sort the file CARS.TXT on your Student disk in descending order.

3. Sort the output of the directory of your Student disk by the file extension starting in column 9.

DIRECTING OUTPUT OF ONE COMMAND TO ANOTHER

Earlier in this chapter, you combined two commands in one statement to perform a specific task when you used the DIR and FIND commands together. The output of one command, the DIR command, was redirected, or piped, to become the input for another command, the FIND command, by using the pipe character (|) between commands.

The format for using a pipe character is:

command produces output | becomes command input

The pipe character is often used with the FIND, SORT, and MORE commands.

For example, you displayed the long text file ADDRESS.TXT using the TYPE command. Since TYPE does not have a pause switch, you instructed DOS to pause after the first screen was filled by piping the output from the TYPE command to become the input for the MORE command. You type

TYPE ADDRESS.TXT |MORE

The MORE command then displayed the output on the screen, pausing after each screen display.

GUIDED TUTORIAL 7-13

You want to sort the output of the DIR command on your Student disk. Since, you can pipe the output of a command to any other command that expects data in the format provided by the first command's output, you can send the output of the DIR command to the SORT command for sorting.

STEP 1 Place your Student disk in drive A and make that drive active.

STEP 2 Type **DIR | SORT** and press Enter↵.

The current directory is displayed in sorted sequence.

GUIDED TUTORIAL 7-14

You want to search for a line in a file that contains both a space and the word chair. You can pipe the output of the first FIND command, which finds the spaces, to a second FIND command, which searches for the word chair. Follow these steps:

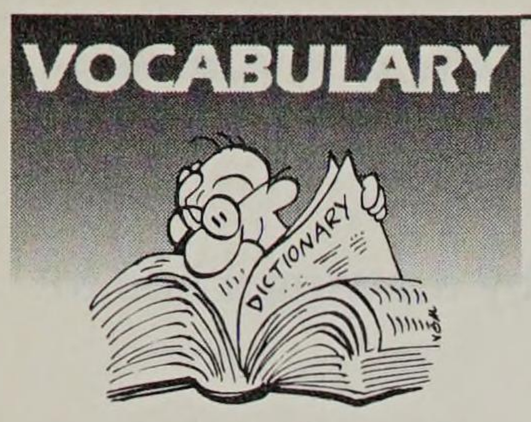
STEP 1 Type **FIND " " OFFICE2.TXT | FIND "chair"** and press Enter↵.

DOS will find all the entries that contain a space, then send this to the FIND command, which looks for chair. The output will be entries that contain both a space and chair.

ON YOUR OWN EXERCISES

1. Find all the entries in OFFICE1.TXT on your Student disk that contain a space and sort them.

2. Display the contents of current directory sorted by size of the file.



Device name

The name of a device that tells DOS where to locate input information and where to direct output information. For example, PRN is the device name for the printer.

Filter

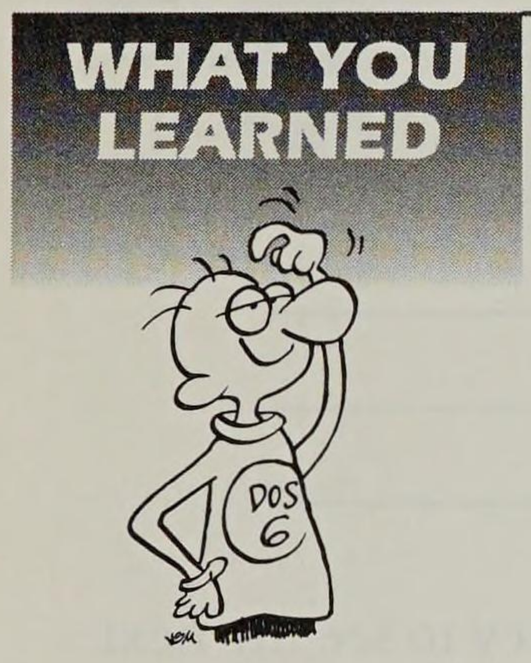
A filter command can select data, rearrange its order, or control screen displays. The filter commands are FIND, SORT, and MORE.

Pipe character

A vertical bar (|) used between commands where the output of one command is redirected, or piped, to become the input for another command.

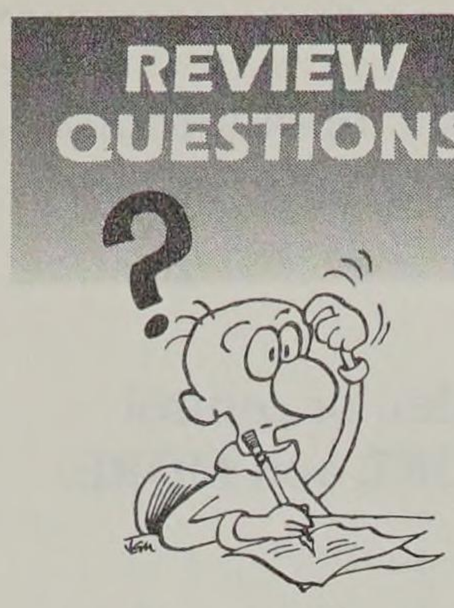
Redirection symbols

A symbol used in a command that redirects input and output to or from another file or device. There are three redirection symbols. The > sends the output of a command to a file or device. The < takes the input needed for a command from a file instead of from the keyboard. The >> appends output from a command to the end of a file, but does not delete the data already contained in the file.



In this chapter, some of the things you learned are:

- How to print output from other DOS commands or put them in a file.
- How to use MORE to display one screen's worth of data at a time.
- How to use FIND to locate text in text files.
- How to use SORT to organize lines in output from DOS commands or a text file.



Answer each of the following with *true* or *false* or by matching or filling in the blanks.

1. Match each of the following device names by drawing a line to the correct device:

PRN or LPT1	Dummy location used by DOS to discard output.
CON	First serial port on your computer.
AUX or COM1	A third parallel printer.
NUL	First parallel port on your printer.
LPT3	The computer's keyboard and screen.

2. Most DOS commands receive input from the keyboard and display their output on the monitor.

3. COM1 and COM2 are serial ports and LPT1 and LPT2 are parallel ports.

4. A DOS command that ends with >> and a filename adds the contents of the DOS command to the end of the named file.

5. What action is taken by the following redirection symbols?

   > _____

   < _____

   >> _____

6. When you use MORE, you can press any key to see the next screen of output.

7. When a DOS command ends with <PRN, the command's output is printed.

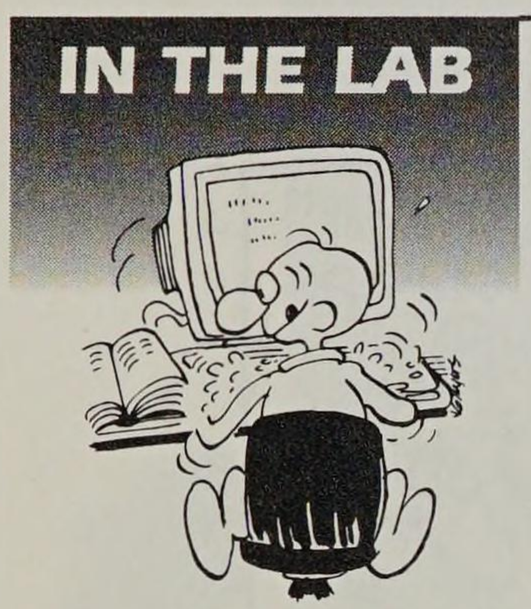
8. FIND "my text" will locate a line containing "This is my text," even when the /i switch is not used.

9. Name the three filter commands and what action each command performs.

_____	_____
_____	_____
_____	_____

10. Sorting without /r sorts the lines in descending order.

11. The pipe character (|) takes the output of the DOS command after the | and uses it for the input of the DOS command before the |.



1. Redirect a TREE display of your Student disk to your printer.

2. Append the directory display of two Work disks that contain data to one file.

3. Display the contents of the file FLOWERS.TXT from your Student disk, pausing after each screen is filled.

4. Locate the string "Because I Could Not Stop for Death" in the file TEXT3 on your Student disk. Do not distinguish between uppercase and lowercase letters. Include the line number that contains the string.

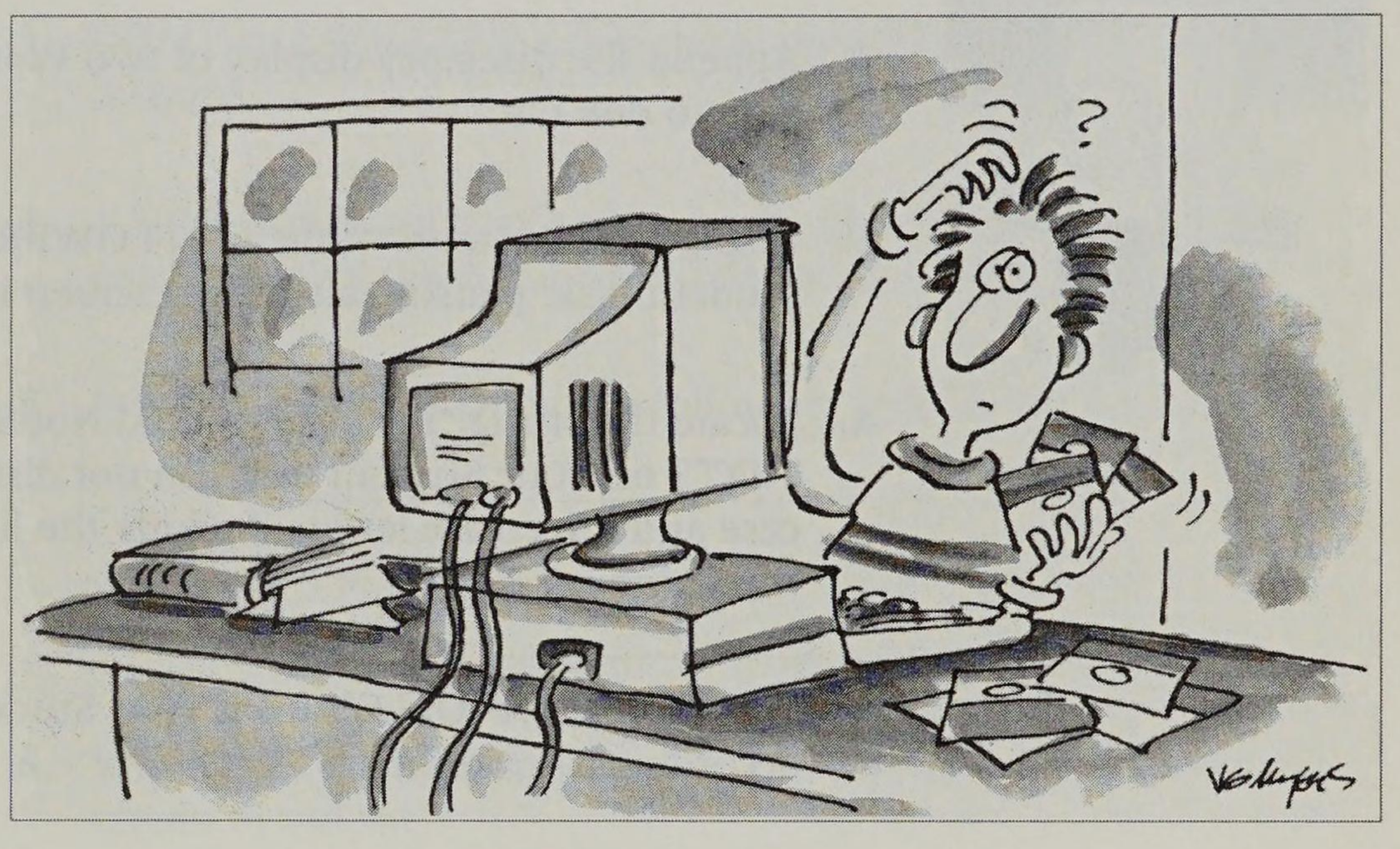
5. Sort the file PACOLLGE from your Student disk in reverse order according to column.

THINKING ON YOUR FEET

You often have trouble finding the correct file or disk at work partly because you are not very organized in the way that you keep your disks and partly because other users borrow your disks to make a copy of the data. Look at these two specific problems and come up with a solution for them as well as other similar problems.

1. You want to put printouts in the disk jackets of your disks at work so you and your co-workers can use the printed copies to select the correct disk to use. To make sure you can find the file, you want to know the directories the files are in as well.

2. You know you have a file to do with Pennsylvania on a disk at work and have forgotten the name of the file. How would you locate the file as quickly as possible if you already knew which disk it was on?



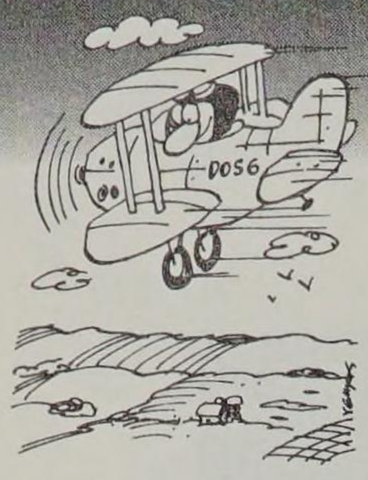
CHAPTER 8

LEARNING THE DOS SHELL

After completing this chapter, you will be able to:

- Tell the advantages and disadvantages of the DOS Shell.
- Switch between the DOS prompt and the DOS Shell.
- Manage your files using the DOS Shell.
- Run utilities and programs using the DOS Shell.
- Access Help to learn about commands and features.

OVERVIEW



The DOS Shell, first introduced in DOS 4.0, provides a visual way of working with DOS. With the DOS Shell you can select options from a menu rather than typing the DOS command at the DOS prompt. The DOS Shell lets you look at the disk and directory structures graphically, and makes it easier to use the programs and commands that can be accessed from the Shell. You can use the DOS Shell to help you manage directories and files as well as to run various utilities and programs.

ADVANTAGES/ DISADVANTAGES OF THE DOS SHELL

There are both advantages and disadvantages to using the DOS Shell. Beginning DOS users may choose to use the Shell because it provides an easy-to-use menu display of the various DOS tasks. More advanced users may choose to ignore it because of its limitations, or they may find it too time consuming.

ADVANTAGES

If you choose to use the DOS Shell, you load it after booting your system. Among the advantages to using the Shell are:

- It is easier to use than entering commands at the command prompt.
- It contains the commands that are most often used in the File menu; thus, you do not need to remember command syntax.
- A program can be run from a program group, a file list, the File menu, or the Main group.

DISADVANTAGES

Among the disadvantages to using the Shell are:

- It requires extra RAM.
- Not all commands are available on the Shell.
- No options are available with the commands.
- It may be more time consuming to use.

USING THE DOS SHELL

The DOS Shell is easy to use. You can load it whenever you want to use it and exit when you are done. You can also temporarily leave the Shell and return to it without having to reload the program.

NOTE: The DOS Shell is available only in DOS 4.0 or later versions. You must enter all commands at the DOS prompt when using an earlier version of DOS.

LOADING AND EXITING THE SHELL

When you first boot or reset your system, your screen displays the DOS prompt (unless someone has customized your copy of DOS to display the DOS Shell first). You can switch back and forth between the Shell and the DOS prompt, or you can exit the DOS Shell and use the DOS prompt and then reload the DOS Shell.

If the DOS Shell is set up to load when you boot your system, it automatically appears on your screen. If your default is set up to display the DOS prompt, you have to load the DOS Shell program.

To load the DOS Shell from a hard drive:

1. At the DOS prompt, type **DOSSHELL**.
2. Press Enter↵.

To load the DOS Shell from a floppy disk:

1. Load DOS from your startup disk.
2. Replace the startup disk with the SHELL disk, and then type **DOSSHELL**.
3. Press Enter↵.

To exit the DOS Shell:

1. Exit any programs displayed in the Active Task List.
2. To exit the Shell, do one of the following:
   - **a.** Press F3.
   - **b.** Press Alt-F4.
   - **c.** Select E**x**it from the **F**ile menu.

You can switch to the DOS prompt by temporarily leaving the DOS Shell and then switch back to the Shell.

To switch back and forth between the DOS Shell and the DOS prompt:

1. Press ⇧Shift-F9 to go to the DOS prompt.
2. Type **EXIT** at the DOS prompt to return to the Shell.

THE SCREEN COMPONENTS

The DOS Shell menu consists of a number of components and viewing areas, as shown in Figure 8-1. Its appearance changes a little depending upon whether you view it in text or graphics mode. With text mode everything must be represented with characters and with graphics mode small pictures or icons can be used. For example, if the DOS Shell is using graphics mode, you will see graphics images that represent disk drives, files, and programs. If the Shell is using text mode, your screen will not include those symbols or icons.

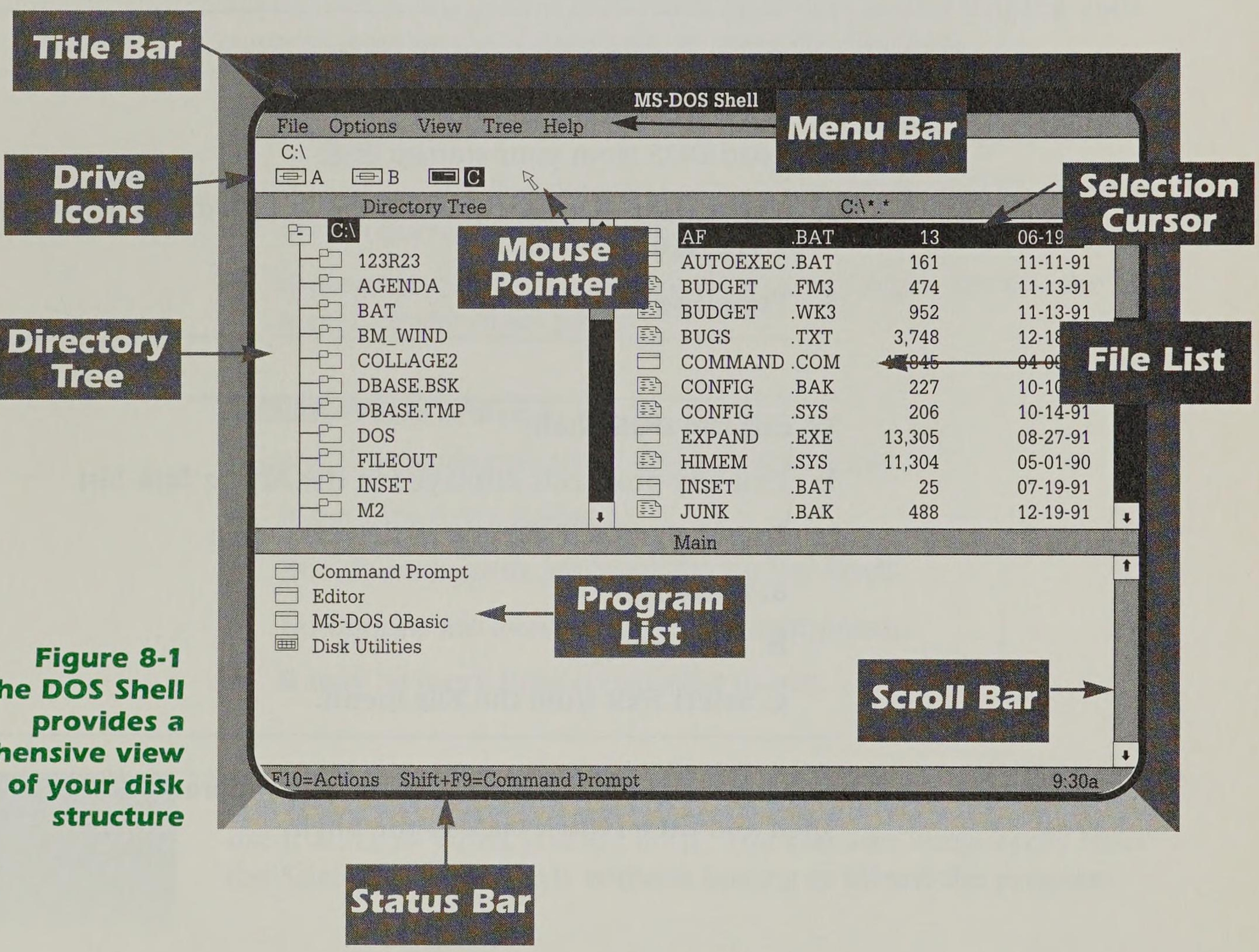


Figure 8-1
The DOS Shell provides a comprehensive view of your disk structure

ELEMENT	FUNCTION
Title Bar	Displays the title MS-DOS Shell.
Menu Bar	Displays the names of the available menus. Each menu displays a list of commands, or menu selections. When you move from area to area within the Shell, the menus change to display only the items that are available for the active area.
Drive Icons	Displays different symbols for floppy disks (drives A and B) and for hard disks (drives C, D, and E). In text mode, these icons are simply the drive letter between square brackets.
Directory Tree	Displays the directories on the current disk drive. Directories that contain subdirectories that are not currently shown in the tree have a plus sign (+) before the directory name. A minus sign (-) appears when the subdirectories are displayed.
File List	Displays the files for the current drive and directory. The pathname for the files appears at the top of the file list.
Program List	Lists the programs and software applications that you can run from the Shell. By default, the program list displays the contents of the Main program group. Program groups are sets of tasks that are listed together.
Scroll Bar	Shows you where you are in a list that is too long to fit in the displayed section. You can move through the list with the arrow keys.
Status Bar	Displays a list of accelerator or shortcut keys, messages from the DOS Shell, and the current time.
Selection Cursor	Highlights the currently selected item.
Mouse Pointer	Displays as either an arrow (graphics mode) or a rectangle (text mode) if a mouse is installed.

BASICS OF USING THE SHELL

The DOS Shell may seem overwhelming at first, but you will quickly find it helpful and possibly easier to use than the DOS prompt. This section provides a basic understanding of how to use the DOS Shell.

Moving Around the Screen

Only one section of the Shell can be active at one time. You can use the keys shown in the chart below to move from one section to another, or to move between items in a section. You can tell which section is active because the bar above it which identifies it is highlighted. You can tell which item is currently selected because it is also highlighted.

KEY	FUNCTION
Tab ⇆	Moves selection cursor to the next section.
⇧ Shift - Tab ⇆	Moves selection cursor to the previous section.
↑, ↓, →, and ←	Scrolls through items in a section.
PgUp and PgDn	Pages through items in a section quickly.
Ctrl - Home and Ctrl - End	Moves to first or last item in a section.

You can also use the mouse to move around the screen by pointing and clicking. Clicking involves moving the mouse pointer over an icon or an area and then pressing the left mouse button. If you wish to activate the directory tree, for example, you can move the mouse pointer over the directory tree heading and then press the mouse button.

Making Menu Selections

To make a menu selection with the keyboard, you must first access the menu bar, next open the menu and select the menu selection you want to use. To open a menu with the mouse, you move the mouse pointer over the menu title then click the mouse button once, opening the menu.

To open a menu:

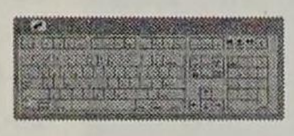
1. Press Alt or F10 to activate the menu bar.
2. Select the menu by pressing ← or → or by typing the underlined letter of the menu name.

OR

1. Move the mouse pointer to a menu title.
2. Click the mouse button.

   The selections for that menu are displayed.

To select an item from the active menu:



1. Use ↑ or ↓ to highlight your selection and press Enter↵.
2. Type the underlined letter of the selection.

OR

1. Click on the menu selection to select an item from the menu that you activated.

Figure 8-2 shows the File menu as the active menu. All items on a menu always appear. However, you can only select items that are not dimmed. Items that are not available appear dimmed, which means they appear in a lower intensity or, depending on your monitor, may not even be visible. If an item displays an ellipsis (...) after its name, more information is needed to perform the command. When you select a command that is followed by an ellipsis, a dialog box appears. To complete the task, you must enter the information that is needed. Figure 8-3 shows a dialog box for the Create Directory command on the File menu.

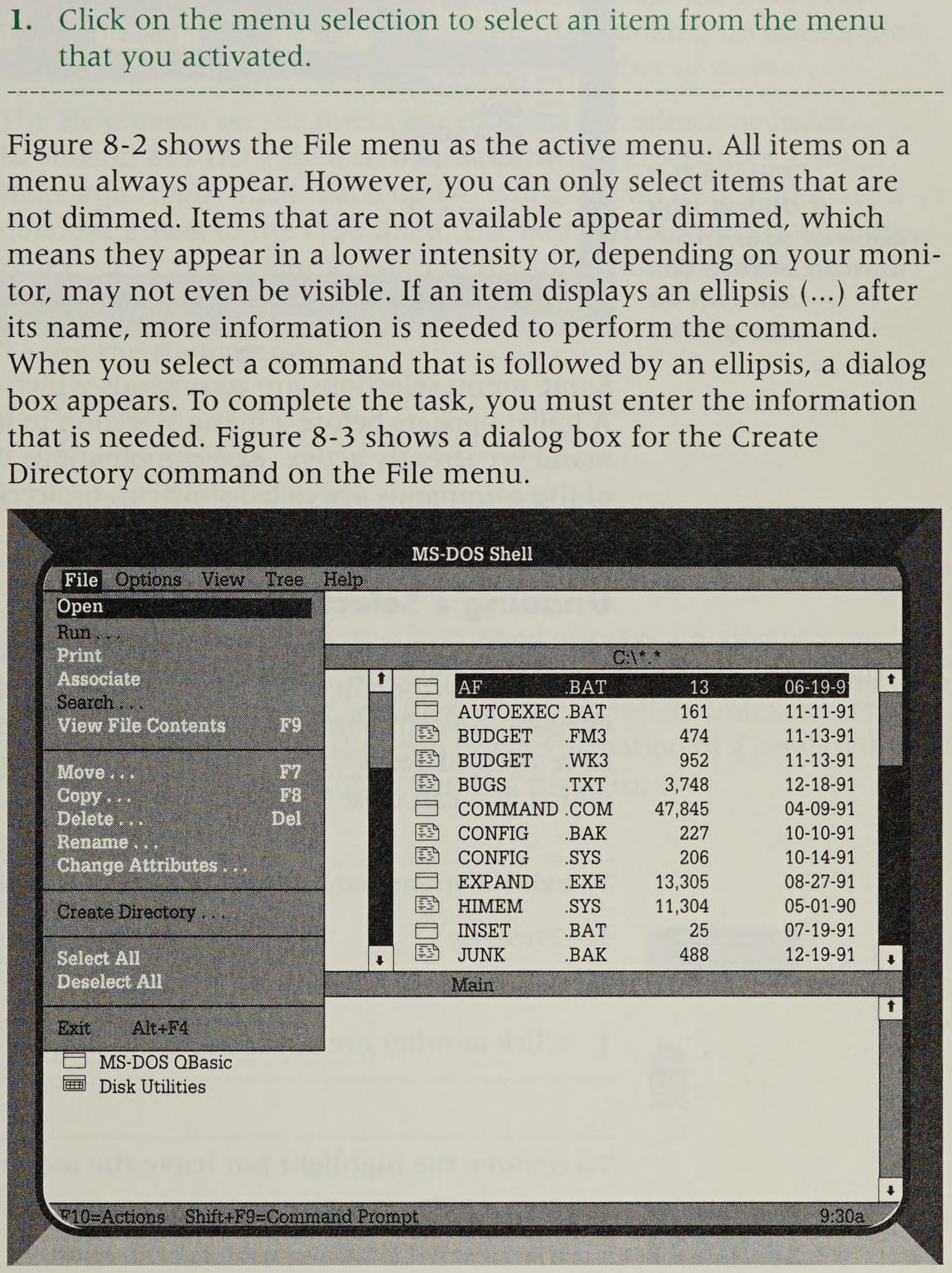


Figure 8-2
The File menu contains a list of the common commands used for file management

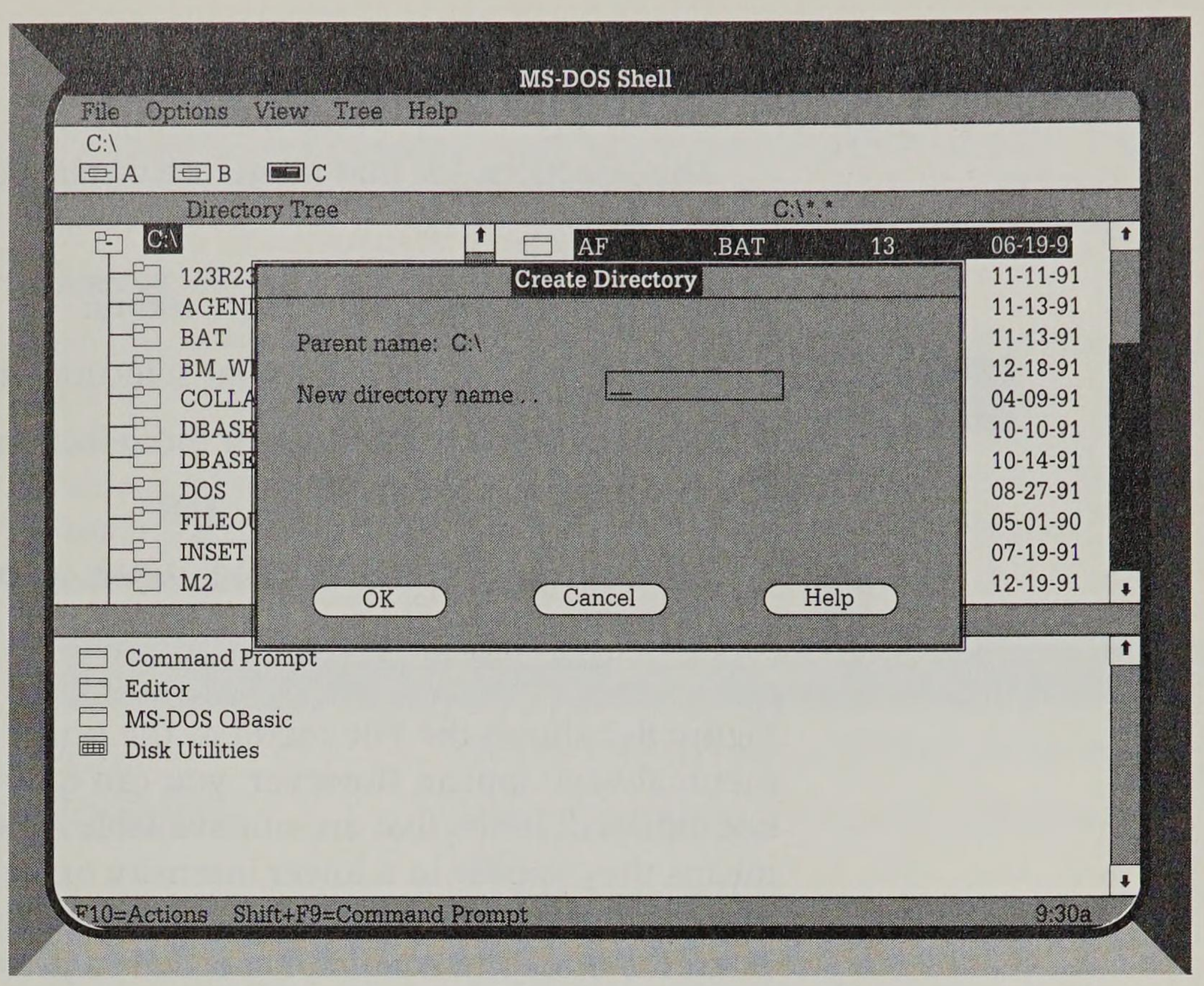


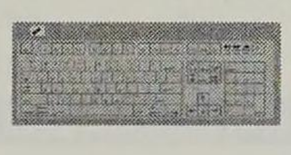
Figure 8-3
A dialog box requires user information before the task can be completed

Some menu selections are commands which can be either on or off. A bullet appears before a menu selection to indicate that the command is currently active. Key combinations that appear after some of the commands are called shortcut, or accelerator, keys. These can be used to execute the command.

Undoing a Selection

DOS lets you stop the process of selecting a menu item if you highlighted the wrong item by mistake or decided you do not want to execute the command. You cannot cancel a command after you have pressed Enter↵, unless the command opens a dialog box, which you can close.

To exit the menu bar without making a selection:

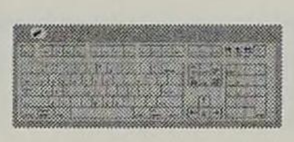


1. Press Esc.

OR

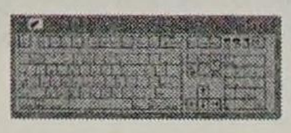
1. Click another area of the screen with the mouse.

To remove the highlight but leave the menu bar active:



1. Press Alt or F10.

To cancel a dialog box:



1. Press Esc or the **Cancel** command button.

NOTE: Remember that you cannot reverse a command after it begins executing. The command begins executing when you press Enter↵ to select the menu item, or when you select OK in a dialog box.

ACCESSING HELP

DOS provides complete on-screen instructions for the DOS Shell that can save you time by keeping you from looking up information in the manual. Help can be accessed in a number of ways.

The Help menu on the menu bar contains the selections Index, Keyboard, MS-DOS Shell Basics, Commands, Procedures, Using Help, and About Shell. Each option will give you information on a different aspect of the DOS Shell. The best place to start is with the Index, since you can proceed from the Index to other topics.

To use the Help menu:

1. Press Alt.
2. Type **H** for Help.
3. Use ↑ or ↓ to highlight a menu selection you want to use, if not Index, and then press Enter↵, or type the selection's highlighted letter.

   When you start Help, the DOS Shell displays a dialog box, as shown in Figure 8-4. A screen of information on a particular topic is shown in the window. When you select Index from the Help menu, you are shown a brief explanation of a how to use Help and a series of topics you can move to.

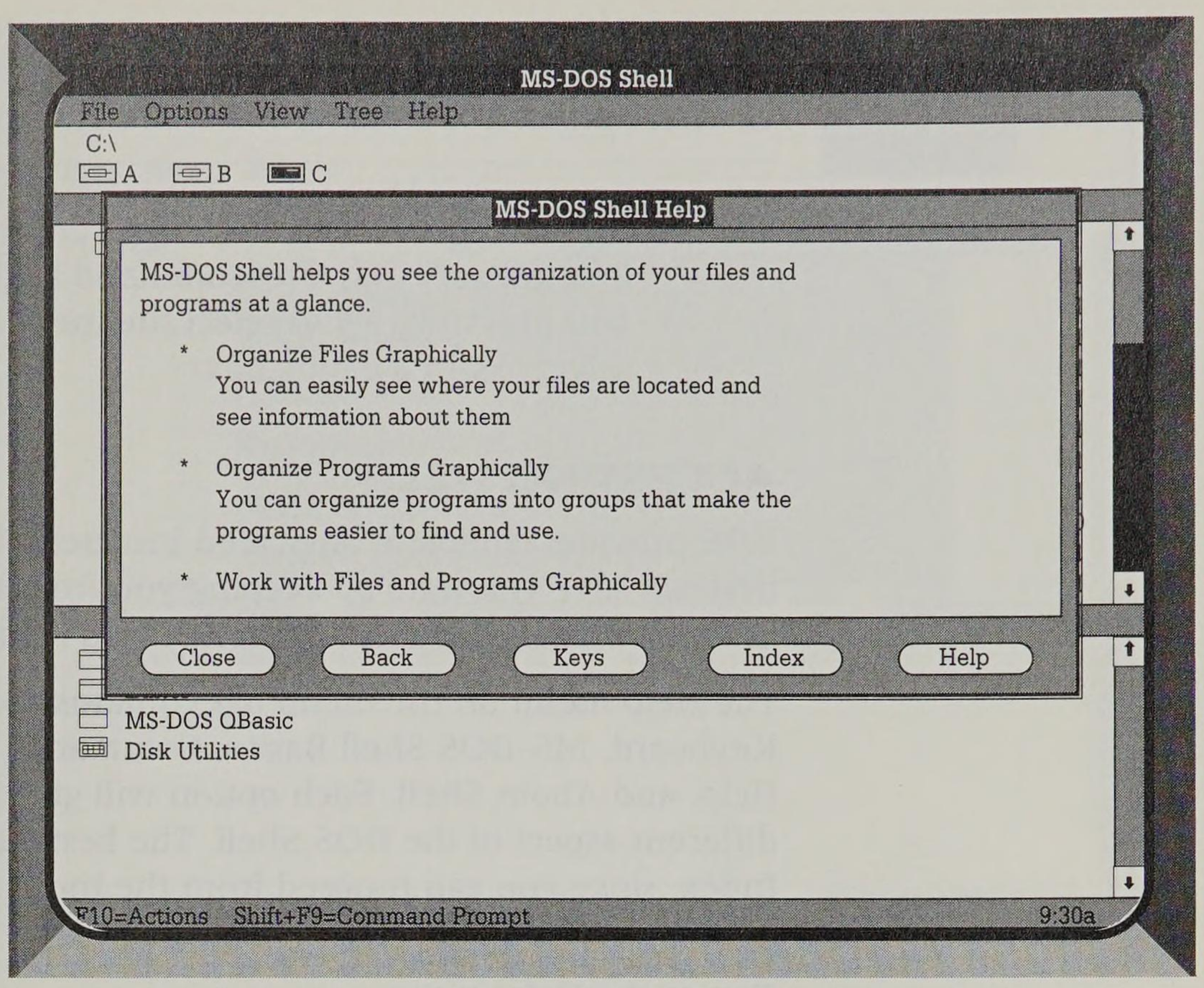


Figure 8-4
This typical Help window contains five buttons: Close, Back, Keys, Index, and Help

4. Press ↑ and ↓ to view the entire screen of information presented.
5. Press Tab to highlight the topic you are interested in
6. Press Enter to view the highlighted topic.

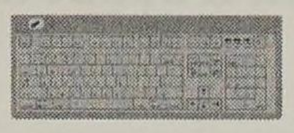
   A new screen of information appears in the Help window, explaining the topic you selected.
7. Press Esc to exit the Help dialog box.

OR

1. Click the Help menu title in the menu bar.
2. Click on the menu selection you want to use.
3. Click on the scroll bar arrows in the dialog box to view the entire screen of information presented.
4. Double-click on the topic you are interested in to move to it.
5. Click on the **Close** button to exit the Help dialog box.

You can also request more detailed information about a particular menu or command.

To display Help information on a menu:

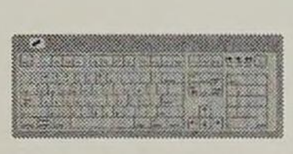


1. Press Alt to activate the menu bar.
2. Press ← or → to select the menu.
3. Press F1.
4. Press Esc to exit the Help window.

OR

1. Click on the menu title with the mouse so that the menu is activated.
2. Press F1.
3. Click on the **Close** button to exit the Help window.

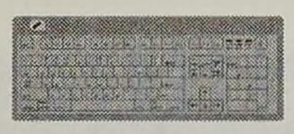
To display Help information on a command:



1. Press Alt to activate the menu bar.
2. Press ← or → to select the menu.
3. Press ↑ and ↓ to highlight the command you want.
4. Press F1.

You can also request Help while you are performing a task by pressing F1. DOS displays a context-sensitive Help window containing information about that task.

You can request Help about a particular viewing area of the Shell.



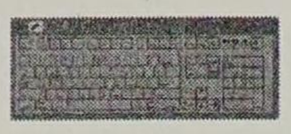
1. Press Tab⇆ to move the selection cursor in the area of the DOS Shell.
2. Press F1.

OR

1. Click on the area of the DOS Shell.
2. Press F1.

When using a dialog box, you may not be sure what information is needed. The Help screen displays the information about the selections DOS expects you to make.

To request Help for a dialog box:



1. Open the dialog box.
2. Press Tab to select a command button or option.
3. Press F1.

A typical Help window contains five buttons, as shown in Figure 8-4 on page 178. You can select one to display additional information about the topic in the Help window.

To select a button:

1. Press Tab until the button is highlighted.
2. Press Enter.

OR

1. Click on the button with the mouse.

The Close button closes the Help window. The Back button displays the previous screen of information, even if you closed the Help window, then reopened it and selected Back. The Keys button displays the initial Help screen about using different keys in the DOS Shell. The Index button displays the Index of Help topics. The Help button displays information about using Help.

GUIDED TUTORIAL 8-1

You have just learned about how the DOS Shell can help you use DOS more efficiently, and want to explore the DOS Shell on your system at work. After booting your computer, you want to start the DOS Shell so you can explore its features.

STEP 1 Type **DOSSHELL** at the DOS prompt.

STEP 2 Press Enter.

GUIDED TUTORIAL 8-2

Now that you are have started the DOS Shell, you want to use the Help feature to learn about the basic features and skills of the DOS Shell.

STEP 1 Press Alt-H to activate the Help menu or click Help in the menu bar with your mouse.

STEP 2 Choose **Shell Basics**.

STEP 3 Press Tab to highlight the Close command button, and press Enter.

STEP 4 Press F3 or Alt-F4 to exit the DOS Shell and return to the DOS prompt.

GUIDED TUTORIAL 8-3

Now that you have read the help system, you want to restart the DOS Shell and practice moving to various sections of the screen.

STEP 1 Type **DOSSHELL** to display the DOS Shell menu.

STEP 2 Press Tab to move to the various areas of the screen.

GUIDED TUTORIAL 8-4

You want to practice exiting the Shell temporarily to let you use the DOS prompt or execute a command or program, and then returning to the DOS Shell.

STEP 1 Press Shift-F9 to go to the DOS prompt.

STEP 2 Type **EXIT** to return to the Shell.

GUIDED TUTORIAL 8-5

You now want to practice selecting a menu and viewing the options.

STEP 1 Press F10 or Alt to move to the menu bar.

STEP 2 Select an item to display a pull-down menu.

STEP 3 Press Esc to quit from the menu.

ON YOUR OWN EXERCISES

1. Start the Shell, exit temporarily, then return.

2. Activate help and view the information on the keyboard.

3. Move to each area of the Shell screen.

4. What are each of the different areas of the Shell screen?

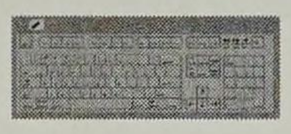
USING THE SHELL FOR FILE MANAGEMENT

By now, you have learned a number of DOS commands, entered at the DOS prompt, that help you manage your directories and files. You can also execute these commands from the DOS Shell. One of the advantages of using the Shell is that it allows you to select a group of files before executing a command. In this way, you enter the command only once.

CHANGING THE DEFAULT DRIVE

When the Shell is first loaded into memory, it displays the directory and file structure of the default drive. You can change the default drive to view the contents of another drive. In the upper-left corner of the screen, just under the menu, there are icons that indicate which drive is currently selected.

To change the default drive from the keyboard:



1. Press Tab until the selection cursor is in the drive area, highlighting the current drive.

2. Press ← or → to highlight the drive you want to change to, or press the Ctrl key while typing the letter of the drive you want.

3. Press Enter.

OR

1. Click on the appropriate drive icon.

While it is reading the files and directories, DOS displays the message "Reading Disk Information." You can repeat this procedure to make sure the directory tree and file listing display your latest changes to the drive.

CHANGING THE DIRECTORY

The directory tree contains a list of the directories on the current drive. The file list displays the files contained in the current directory. You can display the contents of another directory by changing the current directory.

To change the directory:

1. Move to the directory tree using either the keyboard or the mouse.
   - **a.** Press Tab ⇆ or ⇧ Shift - Tab ⇆.
   - **b.** Move the mouse pointer to the directory tree and then click the left mouse button.
2. Highlight the directory.
   - **a.** Click on it with the mouse.
   - **b.** You can use the keys in Table 8-1 to highlight the directory.

Table 8-1 Directory keys and their uses

KEY	ACTION
PgUp / PgDn	Scrolls up or down one window.
↑ / ↓	Scrolls up or down to the next or previous directory.
Home	Highlights the root directory.
End	Highlights the last directory.
A letter	Highlights the first directory name. beginning with that letter.

GUIDED TUTORIAL 8-6

Now that you know how to change drives and directories shown in DOS Shell, you want to look at the contents of your Student disk in drive A.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **DOSSHELL**.

STEP 3 To change the default drive from C to A, first move to the drive indicator area by pressing Tab⇆ or ⇧ Shift-Tab⇆, or clicking the mouse in the drive area. The selection cursor highlights drive C as the current drive. Press ← to highlight drive A, or click on the A drive indicator symbol.

STEP 4 Press Enter↵.

After DOS reads the files and directories in the contents of drive A, the directory tree and file list displays them.

EXPANDING AND COLLAPSING DIRECTORY DISPLAYS

When the Shell is first displayed on the screen, only the first level of the directory is listed. If the directory has a plus sign (+) in front of it, it contains subdirectories that are not being displayed. The directory tree can be expanded to include the subdirectories. If the directory contains a minus sign (-) in its folder, the subdirectories are included in the display and the directory is currently expanded.

Expanding a Directory

To expand one level of a directory:

1. Move the selection cursor to the directory tree by pressing Tab⇆ or ⇧ Shift-Tab⇆.
2. Highlight the directory you want to expand by using ↑ or ↓.
3. **S**elect E**x**pand One Level from the **T**ree menu, or type +.

OR

1. Move the selection cursor to the directory tree by clicking the mouse on the Directory Tree bar.
2. Click on the symbol in front of the name of the directory you want to expand.

To expand all subdirectories below the current directory:

1. Move the selection cursor to the directory tree using Tab or Shift-Tab.
2. Highlight the directory to expand using ↑ or ↓.
3. Select Expand **B**ranch from the **T**ree menu, or type +.

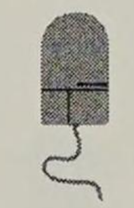
OR

1. Click on the directory tree bar with the mouse.
2. Click on the directory you want to expand.
3. Select E**x**pand Branch from the **T**ree menu or type +.

To expand all subdirectories in the current drive:

1. Move the selection cursor to the directory tree using Tab or Shift-Tab.
2. Select Expand **A**ll from the **T**ree menu or press Ctrl-*.

OR



1. Click the mouse on the Directory Tree bar.
2. Select Expand **A**ll from the **T**ree menu or press Ctrl-*.

Collapsing a Directory

When you are through viewing a directory that has been expanded, you can collapse the view so that only the first level is displayed.

To collapse a directory:

1. Highlight the directory you want to collapse by using ↑ or ↓, or click the mouse on the directory name.
2. Select **C**ollapse Branch from the **T**ree menu.

OR

1. Click the mouse on the directory name.
2. Select **C**ollapse Branch from the **T**ree menu.

GUIDED TUTORIAL 8-7

Now that you know how to change the display of directories in the DOS Shell, you want to view the directory structure of your student disk.

STEP 1 Press Tab⇆ to move to the directory tree or click on the directory tree bar with the mouse.

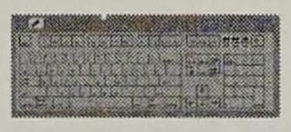
STEP 2 Expand the directory tree to view the first level of directories by selecting E**x**pand One Branch from the **T**ree menu or by clicking on the symbol for the root directory.

CREATING AND DELETING A DIRECTORY

You have already learned to create a directory using the MD (Make Directory) command at the DOS prompt. You can also create a directory using the DOS Shell. A directory can be created at any level in the directory tree. The directory you create becomes a sub-directory of the current directory.

Creating a Directory

To create a directory:



1. Highlight the directory that will contain the new directory in the directory tree.
2. Press Alt-F to activate the File menu.
3. Select Cr**e**ate Directory. DOS Shell displays the Create Directory dialog box, showing the current directory as the parent directory.
4. Type the name of the new directory, following the DOS naming conventions.
5. Select the **OK** button by pressing Tab⇆ to highlight it and pressing Enter↵.

OR

1. Highlight the directory that will contain the new directory in the directory tree.
2. Click on **F**ile in the menu bar to activate the File menu.
3. Click on Cr**e**ate Directory. DOS Shell displays the Create Directory dialog box, showing the current directory as the parent directory.

4. Type the name of the new directory, following the DOS naming conventions.
5. Click on the **OK** button with the mouse.

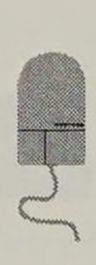
Deleting a Directory

Directories can be easily removed or deleted through the DOS Shell. Before you can delete a directory, you must delete all subdirectories and files it contains. Otherwise, DOS displays a message that it cannot delete the directory until all subdirectories and files are first deleted.

To delete a directory:

1. Make sure the directory to be deleted is empty.
2. Press Tab or Shift-Tab to move to the directory tree.
3. Use ↑ and ↓ to highlight the directory to be deleted.
4. Press Alt-F to activate the File menu.
5. Select **D**elete. DOS asks you to confirm the deletion.
6. Select the **Yes** button.

OR



1. Make sure the directory to be deleted is empty.
2. Click on the directory to be deleted in the directory tree.
3. Click on the **F**ile in the menu bar to activate the File menu.
4. Click on **D**elete. DOS asks you to confirm the deletion.
5. Click on the **Yes** button.

GUIDED TUTORIAL 8-8

As you continue learning how to use the DOS Shell, you want to create a directory on your Student disk in the WP directory to store documents relating to your personal schedule.

STEP 1 Move to the directory tree by pressing Tab until the Directory Tree bar is highlighted.

STEP 2 Highlight the WP directory using ↓.

STEP 3 Press Alt-F, or use the mouse to activate the **F**ile menu.

STEP 4 Select Create Directory.

STEP 5 In the dialog box, type **SCHEDULE** as the name of the new directory.

STEP 6 Select the **OK** button.

STEP 7 Change to the root directory by pressing ↑ until it is highlighted, or by clicking on the root directory name.

SELECTING FILES

Before using a command that works with a file, you must select the file. The Shell lets you select one file or a group of files to work with. There are several ways you can select a group of files, depending on where they are located in the file list.

Selecting a Single File

To select a single file:

1. Move the selection cursor to the file list using Tab⇆ or ⇧ Shift-Tab⇆.
2. Highlight the file by using ↑ or ↓.

OR

1. Click the mouse on the File List bar.
2. Highlight the file by clicking the mouse on the desired file name.

You can use the Home or End keys to move to the first or last file. You can also type a letter to select the first file starting with that letter.

Selecting All Files

There may be times when you need to work with all the files in the file list.

To select all files in the list:

1. Move the selection cursor to the file list using Tab⇆ or ⇧ Shift-Tab⇆.
2. Select the **S**elect All command from the **F**ile menu with the keyboard or press Ctrl-\ (slash).

OR

1. Click the mouse on the File List bar.
2. Click on the **F**ile menu title in the menu bar.
3. Click on the **S**elect All command.

Selecting a Group of Adjacent Files

The Shell provides a way to select files that are next to each other in the file list.

To select adjacent files:

1. Move the selection cursor to the file list using Tab or Shift-Tab.
2. Select the first file in the group.
3. Hold down Shift, and then use ↑ or ↓ to highlight the remaining files in the group.

OR

1. Click the mouse on the File List bar.
2. Click on the first file in the group.
3. Hold down Shift, and click on the last file in the group.

Selecting a Group of Nonadjacent Files

You use a few more steps to select files that are scattered throughout the file list.

To select nonadjacent files:

1. Move the selection cursor to the file list using Tab or Shift-Tab.
2. Select the first file in the group.
3. Press Shift-F8. ADD appears in the status bar.
4. Use ↑ or ↓ to move to the next file to be selected.
5. Press the Spacebar to select the file.
6. Repeat steps 4 and 5 until you have selected all the files in the group.
7. To end the selection, press Shift-F8 again. ADD disappears from the status bar.

OR

1. Move to the file list by clicking on the File List bar with the mouse.
2. Select the first file in the group by clicking on it with the mouse.
3. Hold down Ctrl, and click on another file. Both the first file you selected and the current file are selected.
4. Repeat step 3 until you have selected all the files in the group.

GUIDED TUTORIAL 8-9

You want to expand your DOS Shell skills by selecting files on your Student disk.

STEP 1 Press Tab to move to the file list, or click on the **File List** bar with the mouse.

STEP 2 Press Esc to select the last file in the root directory of your Student disk.

STEP 3 Press ↑ five times to select the fifth from last file.

STEP 4 Press Home to select the first file in the directory.

STEP 5 With the first file selected, press Shift and select, with ↓ or with the mouse, the fifth file in the list.

STEP 6 Release Shift, then select the next file in the list with the mouse or ↓.

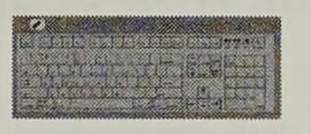
USING FILE COMMANDS

The File menu presents a list of the commands most often used when working with files. They are easy to use because you do not have to remember the syntax of each command. However, you cannot use the optional switches or parameters when using a command from the File menu.

Renaming Files

You can change the name of a file to make the filename more meaningful. You can rename one or more files using the RENAME command from the File menu.

To rename one or more files:

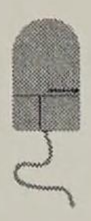


1. Select the file or files you want to rename from the file list.
2. Open the **F**ile menu by pressing Alt-Tab.
3. Type **N** to select Re**n**ame.

   The Rename dialog box is displayed and contains the current name of the file you first selected.
4. Type a new valid filename at the New Name prompt.
5. Press Tab to highlight the **OK** button and then press Enter.

   DOS prompts you for the next new filename until you have renamed all selected files.

OR

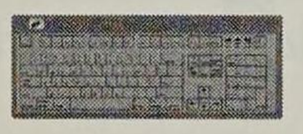


1. Select the file or files you want to rename from the file list .
2. Click on **F**ile in the menu bar.
3. Click on Re**n**ame. The Rename dialog box is displayed and contains the current name of the file you first selected.
4. Type a new valid filename at the New Name prompt.
5. Click on the OK button. DOS prompts you for the next new filename until you have renamed all selected files.

Deleting files

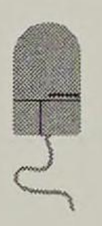
The DELETE command erases a file from the disk. (For detailed information on how DOS deletes a file, see Chapter 6.) You can delete one or more files using the DELETE command from the File menu.

To delete one or more files:



1. Select the file or files from the file list that you want to delete.
2. Press Alt-F to activate the **F**ile menu.
3. Type **D** to select **D**elete from the menu and press Enter↵, or press the **Delete** key.
4. If you are deleting more than one file, the Delete dialog box appears, and you must select **OK.** Then the Shell displays a confirmation dialog box for each file you are deleting. If you are deleting only one file, the Shell only displays the confirmation dialog box.
5. Use Tab↹ to highlight the Yes button in the confirmation dialog box to delete the file or the No button not to delete the file and then press Enter↵.

OR



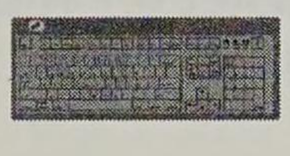
1. Select the file or files from the file list that you want to delete.
2. Click on **F**ile in the menu bar to activate the File menu.
3. Click on **D**elete from the menu.
4. If you are deleting more than one file, the Delete dialog box appears, and you must click on the **OK** button. Then the Shell displays a confirmation dialog box for each file you are deleting. If you are deleting only one file, the Shell only displays the confirmation dialog box.

5. Click the **Yes** button in the confirmation dialog box to delete the file or the **No** button not to delete the file.

Printing Files

The PRINT command sends a copy of a text file to your printer. You can print one or more text files using the Print command from the File menu. However, before printing a file for the first time during the current DOS session, you must exit the Shell and type **PRINT** and a filename at the DOS prompt. After entering the command, press Enter and respond to DOS's prompt to direct the output to your printer.

To print one or more files:



1. Select the file or files from the file list that you want to print.
2. Press Alt-F to activate the File menu.
3. Type **P** to select **P**rint.

   If you selected more than one file for printing, DOS adds the subsequent files to the print queue. As a file finishes printing, DOS sends the next file to the printer.

OR

1. Select the file or files from the file list that you want to print.
2. Click on **F**ile in the menu bar to activate the File menu.
3. Click on **P**rint. If you selected more than one file for printing, DOS adds the subsequent files to the print queue. As a file finishes printing, DOS sends the next file to the printer.

Copying Files

The COPY command lets you copy files to a different drive or directory, or, if a different filename is used, to the same directory. You can copy one or more text files using the Copy command from the File menu.

To copy one or more files:

1. Select the file or files from the file list that you want to copy.
2. Press Alt-F to activate the **F**ile menu then press C to select **C**opy, or press F8.

   The Copy File dialog box is displayed with the selected file or files in the From text box. The current directory is displayed in the To text box.

3. In the To text box, enter the drive and directory to copy file or files to.

4. Select the **OK** button. The file list and directory tree are automatically updated as needed.

OR

1. Select the file or files from the file list that you want to copy.

2. Click on **F**ile in the menu bar, then on **C**opy in the menu.

   The Copy File dialog box is displayed with the selected file or files in the From text box. The current directory is displayed in the To text box.

3. In the To text box, enter the drive and directory to copy the file or files to.

4. Click on the **OK** button. The file list and directory tree are automatically updated as needed.

A shortcut for copying files with the mouse is to:

1. Select the file or files from the file list that you want to copy.

2. If you are copying to another directory on the same disk, press Shift. If you are copying to another disk, do not press Shift.

3. Click on the selected file or files and do not release the mouse button.

4. **M**ove the mouse pointer to the directory or disk icon you want to copy them to, then release the mouse button.

5. When the DOS Shell prompts you to confirm that you want to copy the files, click on the **Yes** button.

Moving Files

You can move one or more files to another location using the Move command from the File menu. During the procedure, DOS copies the files to the new location, then deletes the data from its original location.

To move one or more files:

1. Select the file or files from the file list that you want to move.

2. Press Alt-F to activate the **F**ile menu then select **M**ove, or press F7.

   The Move dialog box is displayed with the selected file or files in the From text box.

3. In the To text box, type the drive and directory you want to move the file or files to.
4. Select the **OK** button.

OR

1. Select the file or files from the file list that you want to move.
2. Click on **F**ile in the menu bar, then click on **M**ove in the menu.

   The move dialog box is displayed with the selected file or files in the From text box.
3. In the To text box, type the drive and directory you want to move the file or files to.
4. Click on the **OK** button.

DOS Shell also offers a mouse shortcut for moving files:

1. Select the file or files from the file list that you want to move.
2. If you are moving to another directory on the same disk, do not press Shift. If you are moving to another disk, do press Shift.
3. Click on the selected file or files and do not release the mouse button.
4. Move the mouse pointer to the directory or disk icon you want to copy them to, then release the mouse button.
5. When the DOS Shell prompts you to confirm that you want to move the files, click on the **Yes** button.

GUIDED TUTORIAL 8-10

You want to rename the file CARS.TXT within the WP directory on your Student disk.

STEP 1 Move to drive A, and press Tab until the cursor activates the file list.

STEP 2 Highlight the file CARS.TXT.

STEP 3 Press Alt-F, or use the mouse to activate the **F**ile menu.

STEP 4 Type **N** to select Re**n**ame.

STEP 5 On the New Name line of the dialog box, type **AUTOS.TXT**.

STEP 6 Press Tab to highlight the OK button and press Enter, or click on the **OK** button.

The file list now displays the new filename.

GUIDED TUTORIAL 8-11

You want to copy two adjacent files, MONTH1_6.TXT and MONTH712.TXT, on your Student disk to the \WP\SCHEDULE directory.

STEP 1 Move to drive A and press Tab until the cursor activates the file list.

STEP 2 Highlight the file MONTH1_6.TXT, hold down Shift, and press ↓ to highlight MONTH712.TXT. Both files are now highlighted.

STEP 3 Press Alt-F, or use the mouse to activate the **F**ile menu.

STEP 4 Type **C** to select **C**opy.

STEP 5 In the To text box, type **\WP\SCHEDULE**, then press Tab to select the OK button and press Enter, or click on the OK button.

The Shell displays the file names as they are copied.

ON YOUR OWN EXERCISES

1. Using your Student disk in drive A, create a directory called STATE. Below STATE, create a directory called CITY. Below CITY, create a directory called COUNTY.

2. Using your Student disk, copy the files TEXT1, TEXT2, and TEXT3 to the STATE directory that you created in the previous Exercise.

3. With STATE as the active directory, expand it to display the first level of subdirectories and files. Then collapse the directory back to the parent level.

4. Delete the directory COUNTY that you created in Exercise 1.

5. Select files TEXT1 and TEXT3 that you copied in Exercise 2, and then rename them with a .BAK extension.

WORKING WITH PROGRAM GROUPS

You can run programs easily from the DOS Shell. One of the areas of the Shell is the program list. By default, the program list displays the contents of the Main program group, which contains a list of programs such as the Command Prompt, Editor (or IBM DOS Editor), and MS-DOS QBasic. It also contains the program group Disk Utilities. You can customize this program group list by adding other programs and program groups.

In graphics mode, the Shell displays rectangular icons with a horizontal line at the top to identify program items, and rectangular icons containing six boxes to identify program groups. In text mode, the Shell displays the names of program items plain, but encloses the names of the program groups in square brackets.

The options on the menu bar are limited when the program list is active. It includes only File, Options, View, and Help. Some of the selections for these items are also limited.

OPEN AND CLOSE A PROGRAM

Before you can run a program, you must open the program file, which means to read the file's contents into the memory of your computer. For example, in order to use DOS Shell, which is a program, you have to start or open it.

Remember, a program is any set of commands saved as a file. Program and application are two words for the same thing. You have been using programs, such as DOS, without really realizing that they were programs, up to now. Programs can be very complicated, such as word processors, or financial programs, or they can be very simple, such as the batch files you will be creating later in this book.

There are several terms used here for getting a program working, but they all mean basically the same thing. For your computer to respond to the commands in a program, you have to read the contents of the program file into your computer's memory. Then the computer knows what to do. You can refer to this process as loading the program, opening it, or starting it. However, the action is the same, you are telling your computer to read the content's of the file, then to do whatever those commands tell it to do.

To open a program:

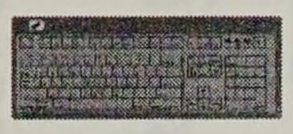
1. Use Tab⇆ and the arrow keys to move to the program list and highlight the program.
2. Press Alt-F, or use the mouse to activate the **F**ile menu.
3. Type **O** to select **O**pen, or select it with the mouse.

OR

1. Click on the program item in the program list with the mouse.

You can also execute a program that is not on the program list.

To run a program not on the list:



1. Press Alt-F, or use the mouse to activate the **F**ile menu.
2. Select **R**un by typing **R** or using the mouse. The Run dialog box is displayed.
3. Type the path and program name in the Command Line text box.
4. Press Enter or select the **OK** button.

When you are finished running a program, you must exit or close the program to return to the DOS Shell. Each program has a different method for exiting that you will learn about when you start learning about that program. For example, to exit the Editor, select Alt-F to activate the File menu, and then select **Exit**.

ADD A PROGRAM TO A GROUP

You can add a program to the Main group, the Disk Utilities group, or a new program group. For example, if word processing is one of the applications you use, you may decide to add it to the Main program group.

To add a program to a program group:

1. Move the selection cursor to the program list.
2. Open the program group you want to add this program to, if it is not the active program group,
3. Press Alt-F, or use the mouse to activate the File menu.
4. Select New by typing **N** or using the mouse.

   The New Program Object dialog box is displayed with the New Program Item option button selected, as shown in Figure 8-5.
5. Select the **OK** button.

   The Add Program dialog box is displayed.

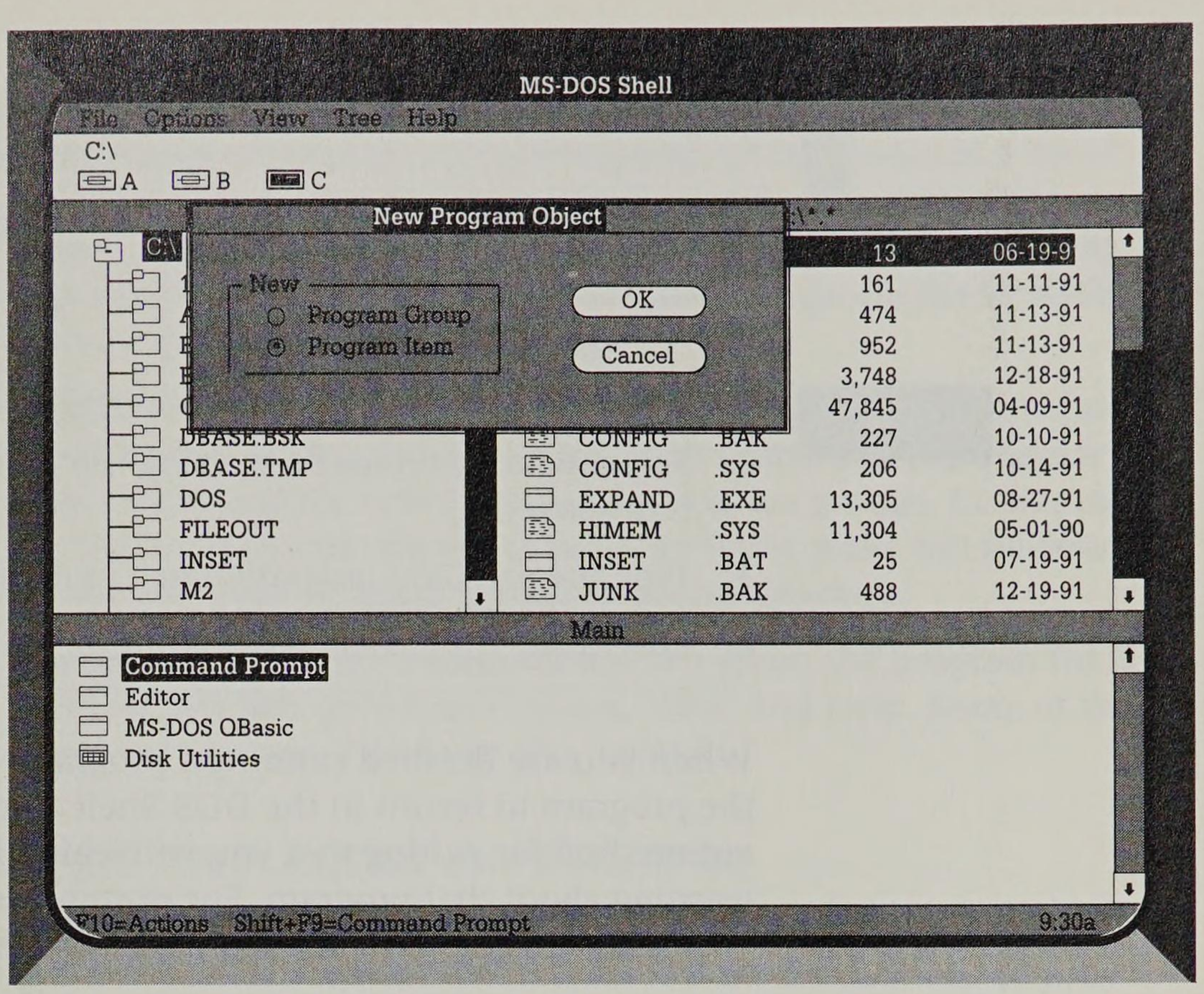


Figure 8-5
New Program Object dialog box

6. Enter the information for the new program.
7. Select the **OK** button.

OR

1. Click on the Program List bar.
2. If the program group you want to add this program to is not active, click on it to make it active.
3. Click on **F**ile in the menu bar to activate the menu.
4. Click on **N**ew in the menu.
5. Select the **OK** button.
6. Enter the information for the new program.
7. Select the **OK** button.

There are a number of pieces of information that you need to enter for the new program item in the Add Program dialog box. The Program Title, which is what appears in the program list, can be up to 74 characters long. The Startup Command, which indicates how DOS Shell should start the program when the program item is selected, can contain one or more DOS commands, separating multiple commands by semicolons (;). The Startup Directory must be specified if the commands used to start the program need to access a directory other than the current one. DOS changes to this directory before opening the program.

An Application Shortcut Key can be entered and is used for switching to this program within the Shell. An optional program Password can be up to 256 characters long. If you use capitalization in the password, it is required when a password is entered. If you choose to pause after exiting the program, you must press any key to return to the DOS Shell.

ADD A PROGRAM GROUP

You can organize new programs by program groups. You can add a program group to the Main group or to any other program group.

To add a program group:

1. Move the selection cursor to the program list.
2. Select the program group you are going to add the new group to, if it is not currently active.
3. Press Alt-F to activate the **F**ile menu.
4. Select **N**ew by typing **N.** The Shell displays the New Program Object dialog box.
5. Select the Program Group option button by pressing ↑.
6. Select the **OK** button. The Add Group dialog box is displayed, as shown in Figure 8-6.

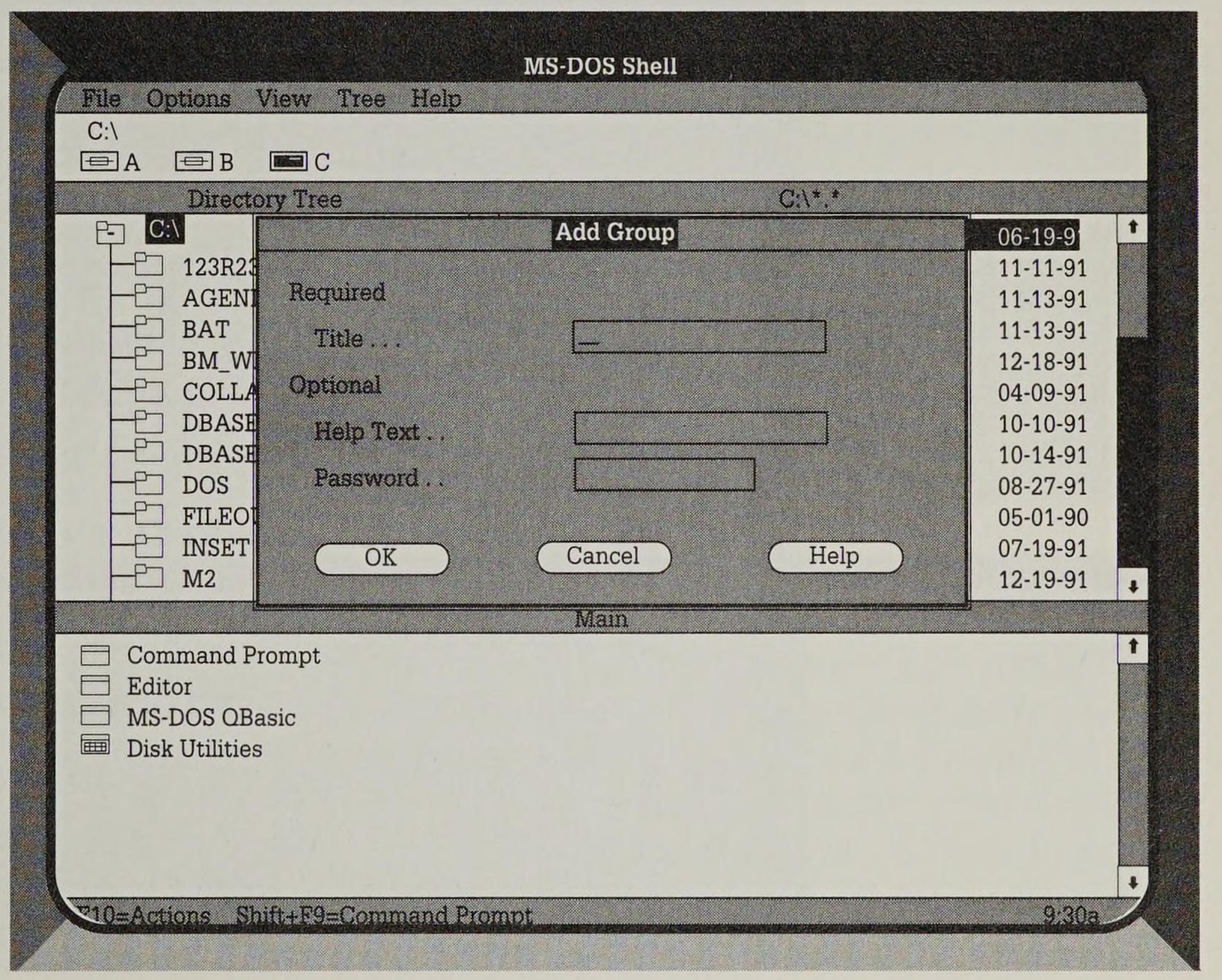


Figure 8-6
Add Group dialog box

7. Enter the information for the new program group.
8. Select the **OK** button.

OR

1. Click on the Program List bar.
2. Click on the program group you are going to add the new group to, if it is not currently active.
3. Click on **F**ile in the menu bar to activate the menu.
4. Click on **N**ew. The Shell displays the New Program Object dialog box.
5. Select the Program Group option button by clicking on it.
6. Click on the OK button. The Add Group dialog box is displayed, as shown in Figure 8-6.
7. Enter the information for the new program group.
8. Click on the **OK** button.

The Title can be up to 74 characters long. On the Help Text line, you can enter an optional help message that can be up to 255 characters long. You can enter an optional Password that can be up to 255 characters long. If you use capitalization, it will be required when a password is entered.

GUIDED TUTORIAL 8-12

As you are exploring the DOS Shell you discover that you can open a program without exiting the DOS Shell. To try this new feature, you open the Editor program from the Main program group, then exit it and return to the DOS Shell.

STEP 1 Press Tab⇆, or use the mouse to move to the program list.

STEP 2 Press ↑ or ↓ until you highlight the program item EDITOR or IBM DOS EDITOR.

STEP 3 Press Alt-F to activate the **F**ile menu.

STEP 4 Select **O**pen by typing **O** or using the mouse to open the file. The Shell displays the File to Open dialog box. Press Enter↵ to start the Editor without opening a file.

The Editor is displayed on the screen.

STEP 5 To exit the Editor, press Esc to clear the initial dialog box, and then press Alt-F or use the mouse to activate the File menu. Select **Exit** to exit the Editor and return to the DOS Shell.

GUIDED TUTORIAL 8-13

At work, you are just learning about the program items and groups in the DOS Shell. Now that you think you understand this feature, you want to open a program item called Norton Utilities® to the Disk Utilities program group. Norton Utilities is a program which works with disks and provides many features for recovering lost data, optimizing storage space, and manipulating information about files.

STEP 1 Activate the Disk Utilities program group.

STEP 2 Press Alt-F, or use the mouse to activate the **F**ile menu.

STEP 3 Select **N**ew by typing **N** or using the mouse, then press Enter↵ to select Program Item from the New Program Object dialog box.

The Add Program dialog box is displayed.

STEP 4 Fill in the Add Program parameters by entering **Norton Utilities** in the Title box, and **C:\NORTON** in the Commands box.

STEP 5 Select the **OK** button.

Your program title now appears in the Disk Utilities program list. If the program files for the program item you have just entered are not available, either because you have not yet installed them or because you accidentally deleted them, selecting this program item simply displays an error message.

STEP 6 Press Del, or select **D**elete from the **F**ile menu.

STEP 7 Select the **OK** button to delete the Norton Utilities program item.

GUIDED TUTORIAL 8-14

Still on your work computer, you want to add a program group that contains the program items for the various spreadsheet programs you use in creating financial analysis and projections. Creating a program group for this will make it easier for you to start any one of those programs from the DOS Shell since they will be easier to find.

STEP 1 Activate the Main program group.

STEP 2 Press Alt-F to activate the **F**ile menu.

STEP 3 Select **N**ew by typing **N** or using the mouse.

STEP 4 Press ↑ to select the Program Group option button from the New Program Object dialog box.

STEP 5 Press Tab⇆ to select the OK button, and then press Enter↵.

The Add Group dialog box is displayed.

STEP 6 Enter **SPREADSHEETS** in the Title box and select **OK**.

A new program group in the Main program group appears, called Spreadsheets.

STEP 7 Press Del or select **D**elete from the **F**ile menu.

STEP 8 Select the **OK** button.

ON YOUR OWN EXERCISES

1. Start the MS-DOS QBasic program from the program list. You can exit this program by pressing Alt-F to activate the **F**ile menu, and then typing **X** to select E**x**it.

2. Add a program group for word processing on the Main program group.

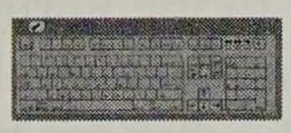
3. Add two program items to the new program group for word processing, one for WordPerfect and the other for Microsoft Word. Enter **C:\WORD** for the command of both program items.

4. Delete the two program items created in exercise 2, and the program group created in exercise 3.

USING SHELL UTILITIES

The Main program group contains the program group, Disk Utilities. This is another group of programs containing utility programs such as Disk Copy, Backup Fixed Disk, Restore Fixed Disk, Quick Format, Format, and Undelete. These program items execute DOS commands which you are already familiar with. Before you can use any of these utilities, you must first activate this program group.

To activate Disk Utilities:



1. Press Tab ⇆ until the selection cursor is in the program list.
2. Highlight **Disk Utilities** using the arrow keys or the mouse.
3. Press Enter ↵.

OR

1. Click the mouse on the Program List bar, which displays the name of the current program group.
2. Click twice, quickly, or double-click on the Disk Utilities program group.

Notice that the program list bar now shows Disk Utilities, the name of the current program group, and that there is now an item called [Main] which you can select to return to the main program group.

DISKCOPY

The Disk Copy program item in the Disk Utilities group executes the DISKCOPY command you used earlier at the DOS prompt that copied the contents of one removable disk to another. The major difference between the two methods is that the Shell defaults to drives A and B, assuming you have two floppy disk drives.

To use Disk Copy command:

1. Select Disk Copy from the Disk Utilities program group.

   The Disk Copy dialog box displays with the parameters set to drive A: B:, to copy the disk in drive A to drive B.
2. Change the parameters if you need to.
3. Select the **OK** button.

You can switch the copy parameters to drive A: A: by pressing ← Bksp five times, then typing **A: A:** before continuing.

QUICK FORMAT AND FORMAT

As you learned earlier, you must format all new disks before you can use them to store data. In the DOS Shell, you can use the Format or Quick Format program items, which execute the FORMAT command, to format disks. Both commands use default parameters for the size and density of the disk being formatted. You can override the default density by including additional parameters with the command.

The Quick Format program item is very similar to the Format command, but executes a quick format. Quick formats are available only for already formatted disks, and do not check the disk for bad areas.

To use the Quick Format or Format program items:

1. Select **Quick Format** or **Format** from the Disk Utilities program group. The same dialog box is displayed for either item.
2. Enter the drive containing the disk if the correct drive is not already displayed.
3. Select the **OK** button.

UNDELETE

When you delete a file unintentionally, you can restore the file using the UNDELETE command. Your chances for recovering a deleted file are best if you try to restore the file immediately after deleting it. If other changes occur to the disk before you try to restore a deleted file, new information may have written over the deleted file, making it unrecoverable. In Chapter 6, we discussed the internal procedures of how DOS manages deleted files on a disk.

To use the Undelete program item:

1. Select **Undelete** from the Disk Utilities program. The Undelete dialog box is displayed with the warning;

> This action may cause the permanent loss of some deleted files. Press F1 for more information if you are unsure of whether to continue.

2. Type the name of the file to be restored.
3. Press Tab ⇆ to highlight the OK button, then press Enter ↵.

The UNDELETE command may not be able to restore deleted files if your disk is full or if you are using task swapping while executing this program.

GUIDED TUTORIAL 8-15

You have a set of old disks you used to backup your system. Now that you have backed up the files off your system more recently, you no longer need to save the information on those files. Instead of simply deleting the information on those files, you may want to format them quickly.

STEP 1 Place the first disk you want to format in the disk drive.

STEP 2 Press Tab⇆ or ⇧ Shift - Tab⇆ to move to the program list or by clicking on it with the mouse.

STEP 3 Highlight the Disk Utilities program group with ↑ and ↓ then press Enter↵, or double click on the program group with the mouse.

STEP 4 Highlight the **Quick Format** program item and press Enter↵, or double click on it with the mouse.

STEP 5 Type **A:** in the Parameters text box.

STEP 6 Select the **OK** button.

STEP 7 Press Enter↵ in response to the prompt, after making sure the correct disk is in the drive.

STEP 8 Press Enter↵ to not assign a volume label to the disk.

STEP 9 Type **Y** and press Enter↵ if you have another disk to format.

STEP 10 Repeat steps 7, 8, and 9 until all your disks are formatted.

STEP 11 Type **N** and **E** after formatting your last disk.

STEP 12 Press the Spacebar to return to the DOS Shell.

GUIDED TUTORIAL 8-16

You want to copy the entire contents of your Student disk to a blank disk, so that you can store the original as a backup and use the copy.

STEP 1 Place the Student disk that you want to copy in the A drive.

STEP 2 Highlight the Disk Copy program item and press Enter↵, or double click on the program item with the mouse.

The Disk Copy dialog box appears.

STEP 3 Type **A: A:** in the Parameters text box.

STEP 4 Select the **OK** button.

STEP 5 Press Enter↵ in response to the prompt.

You will exchange the source and target disks in response to the prompts, pressing Enter↵ each time to tell DOS that the new disk is in the disk drive.

STEP 6 Type **N** and press Enter↵ in response to the prompt asking if you want to copy more disks.

STEP 7 Press the Spacebar to return to the DOS Shell.

The copy of the Student disk will be the last disk you insert in the drive. When the copy process is finished, look at the directory tree and the file list. Notice that the same directories and files appear as you have previously seen on the Student disk.

GUIDED TUTORIAL 8-17

While working with your Student disk you accidentally delete a file called ADDRESS.TXT. You want to restore this file since it contains the names and addresses of your clients.

STEP 1 Press ⇧Shift+Tab↹ to move to the file list.

STEP 2 Press Del, or select **D**elete from the **F**ile menu.

STEP 3 Select the **Yes** button.

STEP 4 Press Tab↹ to return to the program list.

STEP 5 Highlight the Undelete program item and press Enter↵, or double click on the program item with the mouse.

This opens the Undelete dialog box.

STEP 6 Enter **ADDRESS.TXT** in the Parameters text box.

STEP 7 Select the **OK** button.

STEP 8 Type **Y** in response to the prompt if you want to restore the file presented.

If DOS cannot Undelete the file, proceed immediately to step 10.

STEP 9 Type **A**.

STEP 10 Press Spacebar to return to the Shell.

Look at the file list. You will see that the file ADDRESS.TXT appears in the file list again.

ON YOUR OWN EXERCISES

1. Use the Disk Copy program item to copy your Student disk to a Work disk of the same size and density.

2. Delete the first three files in the root directory of the copy of your Student disk created in Exercise 1. Then use the Undelete program item to restore them, using a "Q" as the first letter in each file's name.

3. Do a complete format of the Work disk you created in Exercise 1, with the Format program item.

USING THE ACTIVE TASK LIST

The Active Task List lets you to start one or more programs and keep them active at the same time. You can switch back and forth between these programs. For example, suppose you are using a word processing program to describe a report that you created in a spreadsheet program. You can open both programs and begin working in the word processing program. When you need to refer to the spreadsheet, you can switch to that program without having to reload it. Then you can switch back to your word processing document to continue editing your report.

The Active Task List does not appear in the Shell's screen until you activate the task swapping feature, which allows you to switch between programs.

To activate the task swapping feature:

1. Open the **O**ptions menu.
2. Select **E**nable Task Swapper.

The Active Task List appears beneath the file listing to the right of the program list, as shown in Figure 8-7. When it opens, the Active Task List is empty. As you start programs, the names of the currently loaded programs appear in the Active Task List.

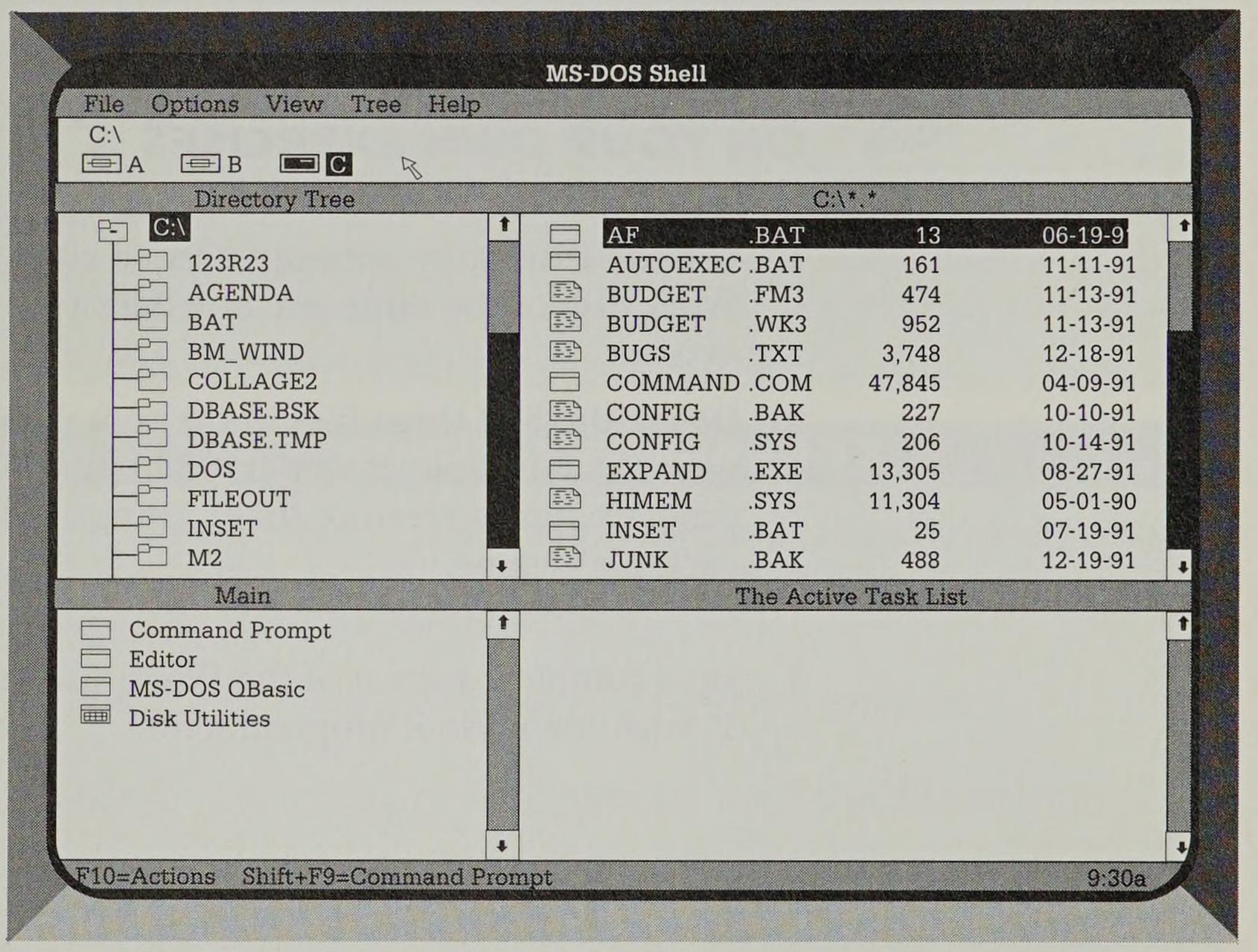


Figure 8-7
The Active Task List

NOTE: Task swapping takes a great deal of memory to run efficiently. Depending on the amount of memory installed in your computer system, you may not be able to use task swapping at all, or the switching between tasks will be too slow to be useful.

Since we cannot insure that your system has sufficient memory for task swapping to be practical, we do not include any exercises to try yourself for this section. You can try the Guided Tutorial presented, if you want to try this feature, and think you can do so with your system.

You can switch from an active program back to the Shell by pressing Ctrl-Esc. Once in the Shell again, you can carry out a command, open another program, or switch to another, already open, program.

GUIDED TUTORIAL 8-18

While working in a text editing program such as DOS's Editor, you may want to copy a file from a floppy to the hard drive so that you can return the disk.

STEP 1 In the Shell, open the **O**ptions menu by clicking on the menu with the mouse, or by pressing Alt-O.

STEP 2 Select **E**nable Task Swapper by clicking on it or pressing E.

The Active Task List appears to the right of the program listing.

STEP 3 Use Tab to move to the program listing.

STEP 4 Highlight the Editor program item.

STEP 5 Select **O**pen from the File menu.

The Shell disappears from the screen, and the Editor is loaded.

STEP 6 Press Ctrl-Esc.

You return to the DOS Shell. The Active Task List now displays the Editor as an entry.

STEP 7 Use Tab or Shift-Tab to return to the program list.

STEP 8 Highlight the Command Prompt program item with the Arrow keys or the by clicking on it with the mouse.

STEP 9 Select **O**pen from the **F**ile menu.

STEP 10 At the DOS prompt, type **COPY A:\OFFICE1.TXT C:\DOS**.

STEP 11 Type **Exit**.

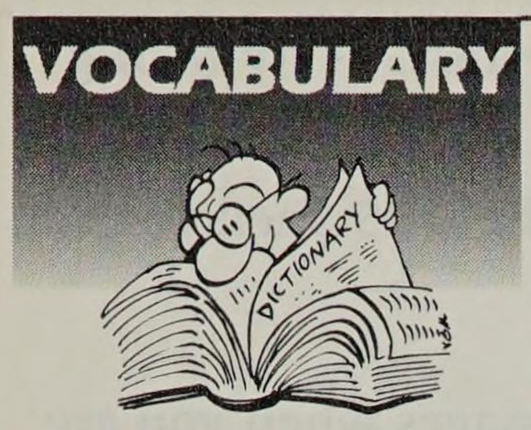
This returns you to the DOS Shell.

STEP 12 Press Tab to move to the Active Task List.

STEP 13 Highlight the Editor entry in the Active Task List and press Enter.

STEP 14 Select **Exit** from the File menu.

When the Editor closes, you are returned to the DOS Shell.



Accelerator key

A shortcut key that can be used instead of selecting an item from a menu.

Command button

A selection at the bottom of a dialog box where you accept the information entered, cancel the command, or request Help.

Dialog box

A box that the DOS Shell displays where you can enter more information in order to complete the execution of a command.

DOS Shell

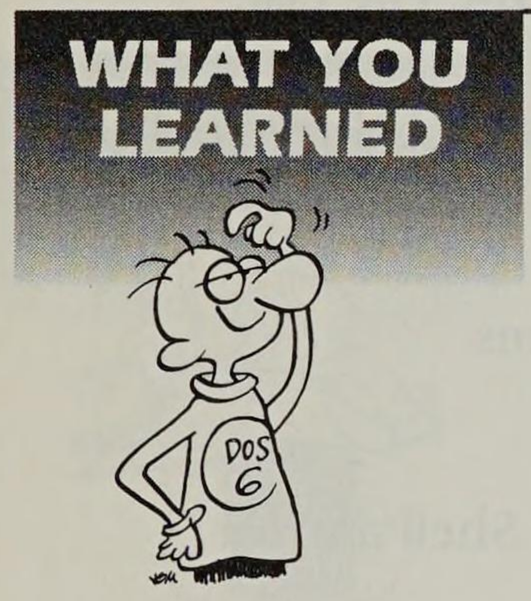
A program that provides a visual way to work with DOS using pull-down menus and program items to access commands, and a directory tree and file listing for viewing the contents of disks.

Program group

A list of programs or software applications that can be run once the program group is opened or activated.

Utility program

Programs that assist you in file management, such as Disk Copy, File Backup, Format, and Undelete.



In this chapter you learned all the basic techniques of working with the DOS Shell including the following:

- How to switch back and forth between the DOS prompt and the DOS Shell.
- How to identify the various sections of the Shell screen and how to move from section to section.
- How to change the active drive with the Shell.
- How to look at your directory structure.
- How to select files and perform file tasks.
- How to organize programs into program groups.
- How to switch between active programs.

REVIEW QUESTIONS

Answer each of the following with *true* or *false*, or by filling in the blank.

1. To switch between the DOS prompt and the DOS Shell you can press Shift-F3.

2. Dialog boxes are used to display error messages when you are using the DOS Shell.

3. Utility programs can assist you with File Management tasks.

4. The DOS Shell is not available with releases of DOS prior to DOS 4.

5. The Tab key can be used to move from one section to another in the DOS Shell.

6. The icons in the upper-left corner of the Shell screen represent directories on your disk.

7. Use the Select All command to select all the files in the File List with this section of the Shell active.

8. You can use Del to delete selected files in the File List.

9. Use F7 to indicate that you want to move files once you have selected them.

10. A program group is a collection of programs.

11. Some of the advantages of using the DOS Shell are:

    _____

    _____

    _____

12. Some of the disadvantages of using the DOS Shell are:

    _____

    _____

    _____

13. The command for loading the Shell is _____.

14. List three ways to exit the DOS Shell permanently:

_____ _____ _____

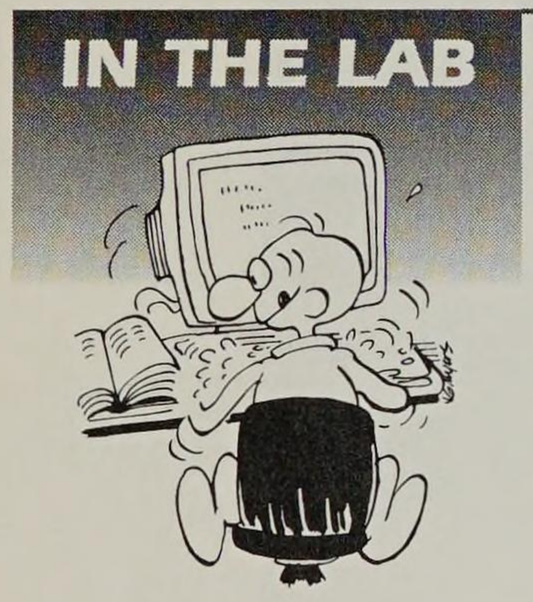
15. To go to the command prompt temporarily from the DOS Shell, type _____. To return to the DOS Shell, type _____.

16. There are a number of ways to request Help. Three of them are:

_____

_____

_____



1. Using your Student disk, practice moving around the DOS Shell. Then practice activating different disk drives and different directories.

2. Select all the files on your Student disk, and then copy them to a new directory on the same disk.

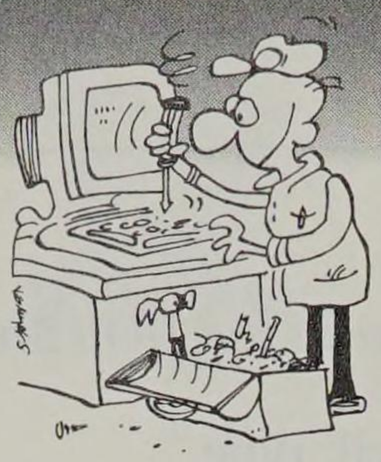
3. Using the new directory that you created in Exercise 2, select all the files that begin with "P," and then move them to yet another directory on the disk.

4. Using the new directory from Exercise 2, delete every other file.

5. Using the DOS Shell, format a new disk and a used disk.

6. Add a program group called GRAPHICS to the Main program group.

THINKING ON YOUR FEET



A friend of yours is reluctant to use the DOS Shell. Explain the advantages of making the transition and the steps and the procedures that they can use to organize their programs when they have the DOS Shell to work with.

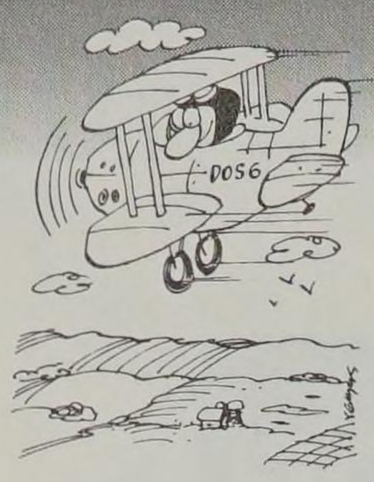
CHAPTER 9

USING THE DOS EDITOR

After completing this chapter, you will be able to:

- Start the DOS Editor.
- Create a file with the Editor.
- Save and print a file.
- Edit an existing file.
- Exit the DOS Editor.
- Use important Editor options.

OVERVIEW



The DOS Editor is a text editor. A text editor is a program that you can use to display, create, print, or modify files that contain text. Text files are not the standard files created with a word processing program that you might use to create a letter. Word processing files have additional codes in them that control the appearance of the text. The text files that you use with the editor contain only text with no additional formatting and are sometimes referred to as unformatted text files. You can type letters, lists, and other kinds of information to store in a text file. This text will print as you type it and will not be formatted with boldface and other special options that you can add with a word processing program. The box "The Inside Scoop on Text Files" provides more information on text files.

The Editor is a more sophisticated option that Edlin which was the only DOS option for working with text files until DOS 5 was introduced. DOS still includes Edlin, which is helpful when creating simple text files. However, Edlin works with a file one line at a time. It is more difficult to use because you constantly refer to a line number with a single letter command. For example, 15, 20d is the command to delete lines 15 to 20. Edlin also does not include a menu structure or on-screen help; therefore, you probably will be looking up the correct format in a reference book before entering a command unless you have used Edlin many times before.

The Editor is full-screen oriented, which makes it easier and more flexible to use. It allows you to move around the screen using the mouse or the arrow and other keys. It also provides a menu structure for making your selections. On-screen help can be requested when you are in various stages of the Editor.

THE INSIDE SCOOP ON TEXT FILES

The Editor is designed for text files (also called ASCII files or ASCII text files) so you will want to know what distinguishes a text file from other file types. Rather than knowing a file is a text file by what it contains, a text file is distinguished more for what it does not contain. A text file only contains characters like the ones you use while entering DOS commands. Many program files, those with a .EXE, or .COM file extension, contain all sorts of other characters since they contain instructions for your computer. Word processor files, like text files, contains text, but these files also contain other information. A word processor file must record the font you want, the margins, the line spacing, and all other features that describe how the file looks when you print it. A word processing package stores this additional information in a variety of ways but what it means to you, is that you do not want to use the TYPE command or the DOS Editor to

look at the contents of the file. The TYPE command and the DOS Editor, as many commands that work with text files, do not filter out information that is not the text you expect. This means that when you use the Editor with a file like MEMO.DOC that is designed for Word, the Editor shows both the text in the file and the additional information that tells Word the margins and line spacing to use with the letter. These extra characters often make the document unusable as a text file.

START THE EDITOR

You can start the Editor from the command prompt or from the DOS Shell.

To start the Editor from the command prompt:

1. Type **EDIT**.
2. To open an existing file, type the path and filename of the file.
3. Press Enter↵.

To edit the file FLOWERS.TXT on a disk in drive A, you would type EDIT A:FLOWERS.TXT and then press Enter↵.

To start the Editor from the DOS Shell:

1. Press Tab↹ to move to the Main group area or double click on the Main group. A double click requires you to move the mouse on the desktop so that the arrow that marks your location is on the Main Group then you need to press the left mouse button twice in rapid succession.
2. Select Editor by pressing the arrow keys and then Enter↵. You can also double click on the Editor if you are using a mouse. This means move the arrow that represent the mouse pointer to the Editor and press the left mouse button twice in rapid succession. DOS displays the File to Edit dialog box shown here:

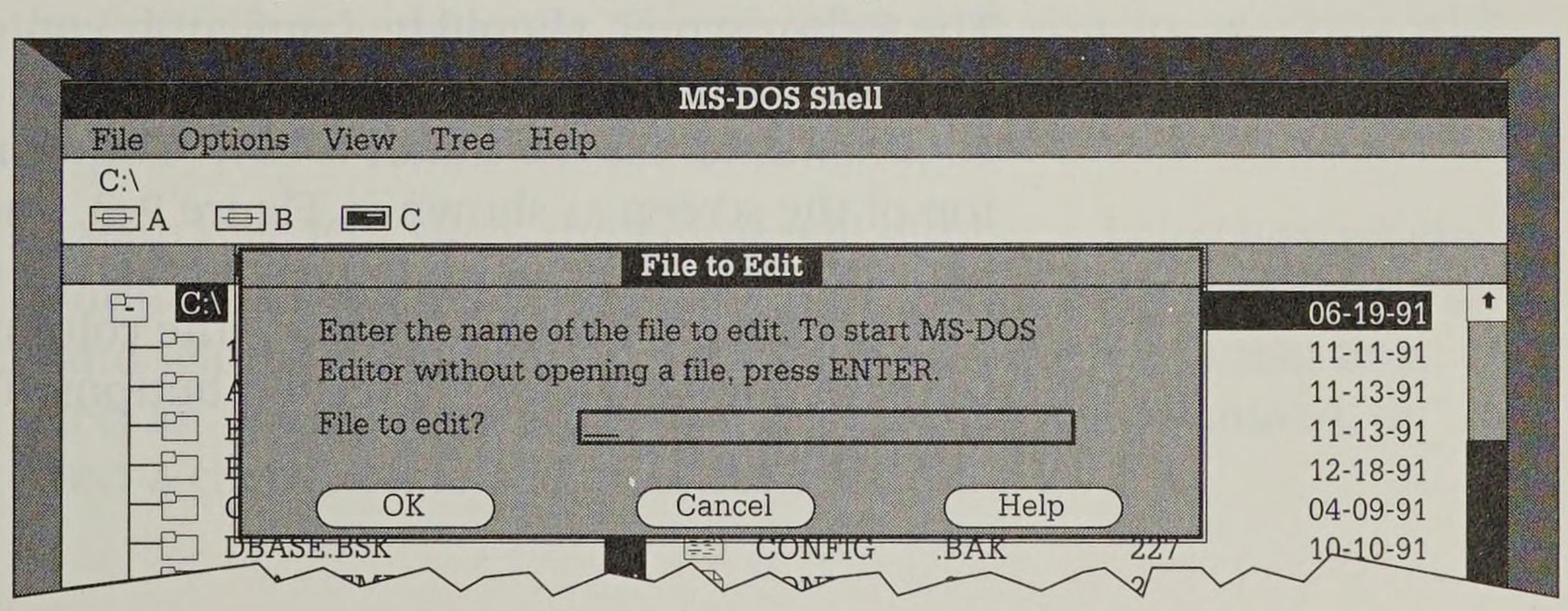


Figure 9-1 File to Edit dialog box

3. To create a new file, select the **OK** button by pressing Tab then pressing Enter. If you prefer, you can click this button with the mouse to select it. To edit an existing file, type the path and filename in the dialog box, and then select the **OK** button.

   If a filename was not entered, DOS displays the screen as shown in Figure 9-2.

4. Press Enter to display the Survival Guide, which contains help information on the Editor. Otherwise, you can press Esc to clear the screen and begin working with the Editor.

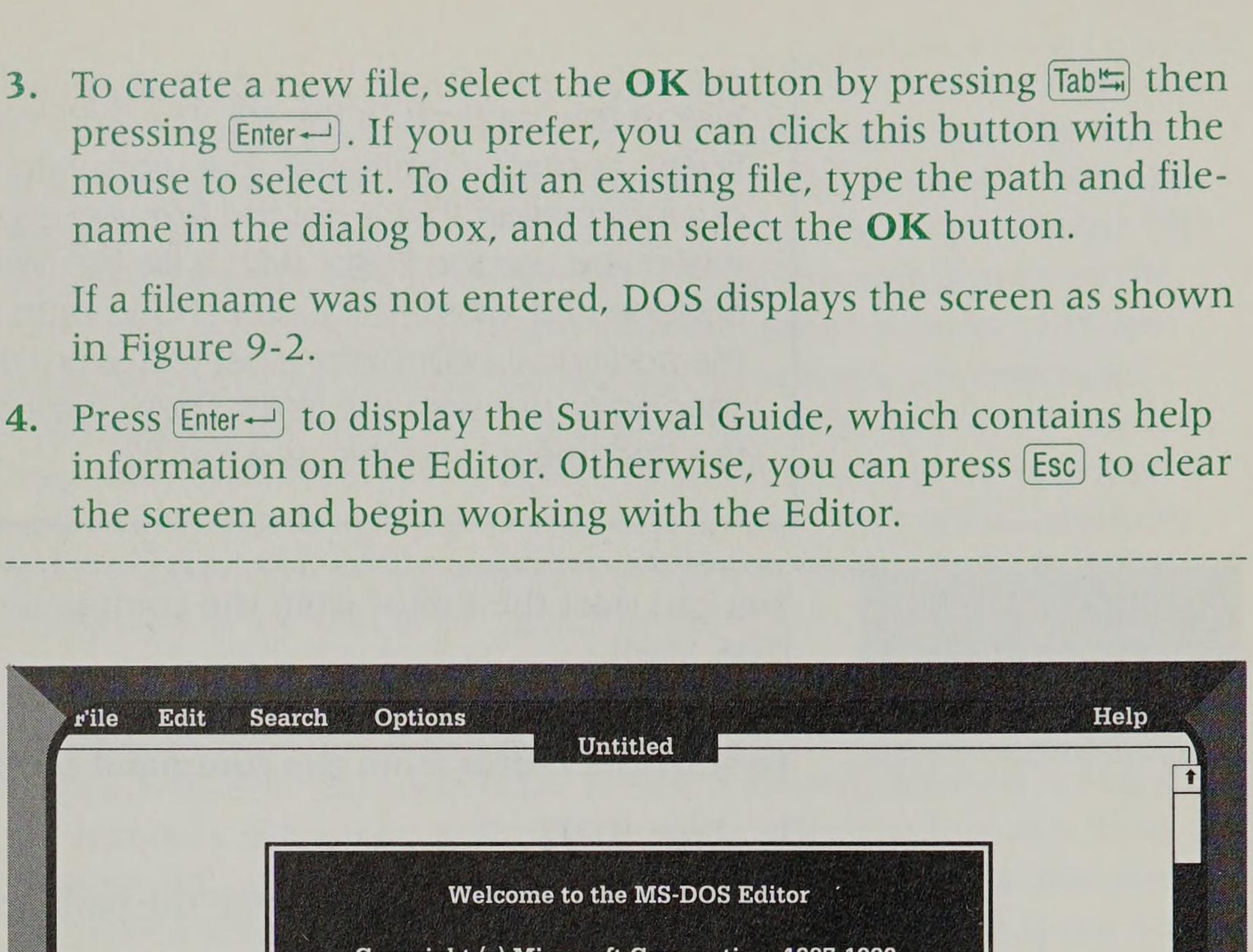


Figure 9-2
An untitled screen appears when you start the Editor without entering a filename

SELECT A MENU AND A COMMAND

The Editor screen should be familiar to you since it is set up in a fashion similar to the DOS Shell. Therefore, selecting menus and commands to use the Editor is easy. The menu bar is located at the top of the screen as shown in Figure 9-3. The reference bar or status bar is located at the bottom of the screen. It contains the name of the application (MS-DOS Editor), the column and row location of the selection cursor, and selection buttons. The remaining large area is for editing text.

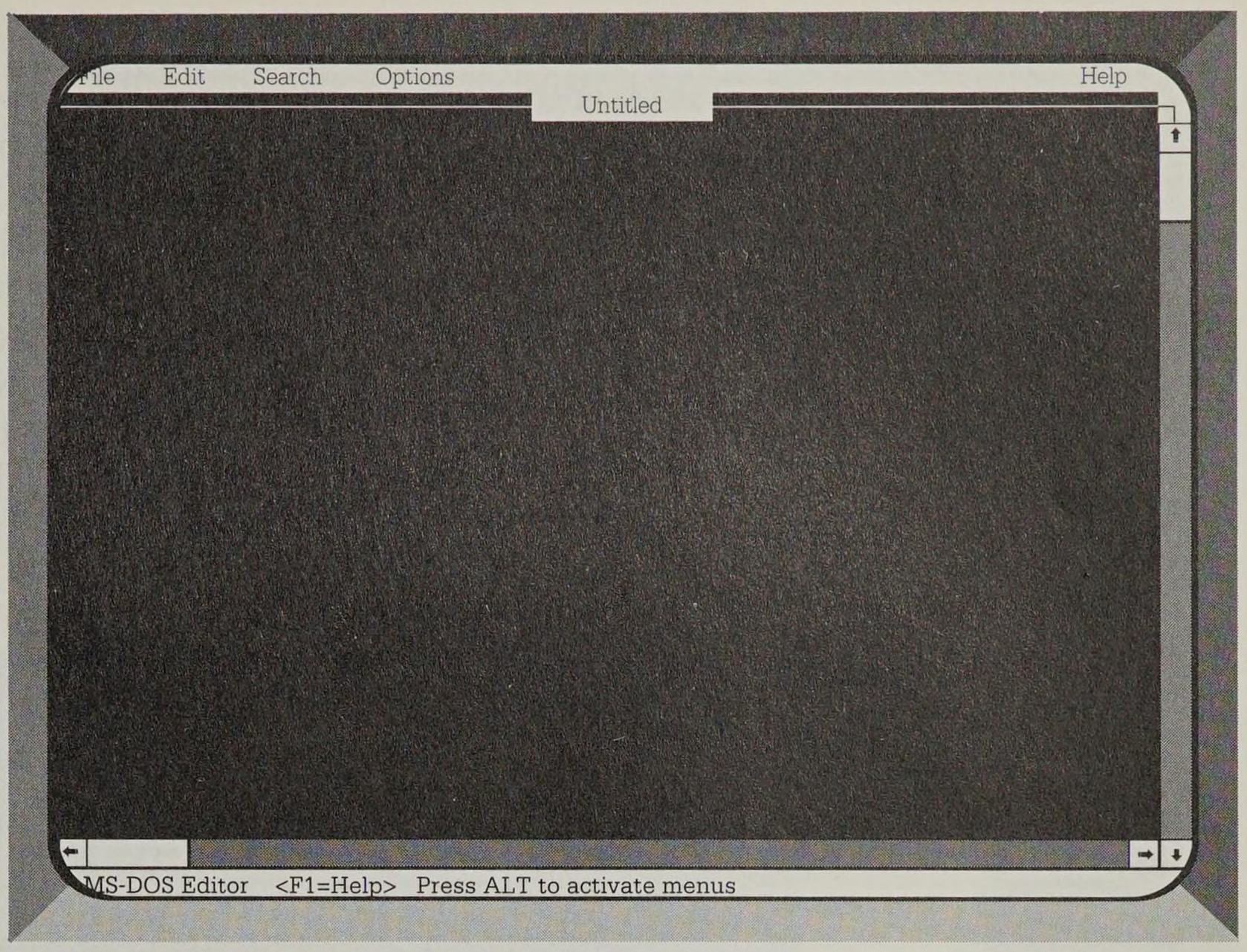


Figure 9-3
The DOS Editor Screen

To activate the menu bar:

1. Press Alt.
2. Type the highlighted letter of the menu you want to select.
3. Select a menu item by using the arrow keys or typing the highlighted letter of the item.

You can also use the mouse to make your selection. Roll the mouse on your work surface until the mouse pointer (the rectangle on the screen that moves when the mouse does) is pointing to the desired menu bar option. Press the left mouse button and release it quickly. You can cancel a menu selection by pressing the right mouse button or by pressing Esc. When you used the mouse to make a selection from the DOS Shell, the mouse pointer looked like an arrow, but in the Editor it is a rectangle. The program that you are working with determines the shape of the mouse pointer and may even change its shape as it moves to different areas of the screen.

As with the DOS Shell, the Editor will display a dialog box when information is required from you in order to continue with the command selected. You may be required to enter text in a text box, select an option button to continue or cancel the command, or select a check box to add or select a feature.

THE EDITOR HELP SYSTEM

The Survival Guide, which is part of the Editor's help system, provides information on editing keys, cursor movement, dialog boxes, selecting text, opening and saving files, and other Editor basics. It is very helpful for a user who is new to the Editor. As we mentioned, this screen can be accessed when you start the Editor without a filename. It also appears when you press F1. You can also display other help information by selecting Getting Started or Keyboard from the Help menu. To activate the Help menu, press Alt-H. For a direct method to display the Getting Started help screen, press F1. To request help about an active command, menu, or dialog box, press F1.

GUIDED TUTORIAL 9-1

DOS has added more help support to the Editor than was available when Edlin was the only option for editing your data. When you load the Editor without a filename, DOS displays the welcome screen in case you need to access help. You will want to try the Editor just as if you were creating a file but had not decided on a filename as yet with these steps:

STEP 1 Type **DOSSHELL** if you are not already in the DOS Shell.

STEP 2 Tab to the **Main** Section of the group area and select **Editor**.

STEP 3 Press Enter↵ or select **OK** to start the Editor without opening a file.

STEP 4 Press Enter↵ to display the Survival Guide help screen.

The cursor is at the Getting Started selection.

STEP 5 Press Enter↵ to display help on this topic.

Your screen now contains a list of more help topics that are related to getting started with the Editor.

STEP 6 Press Tab↹ to select another option or Esc to exit help and return to the editing screen.

STEP 7 To go directly to the Getting Started help screen, press ⇧ Shift-F1.

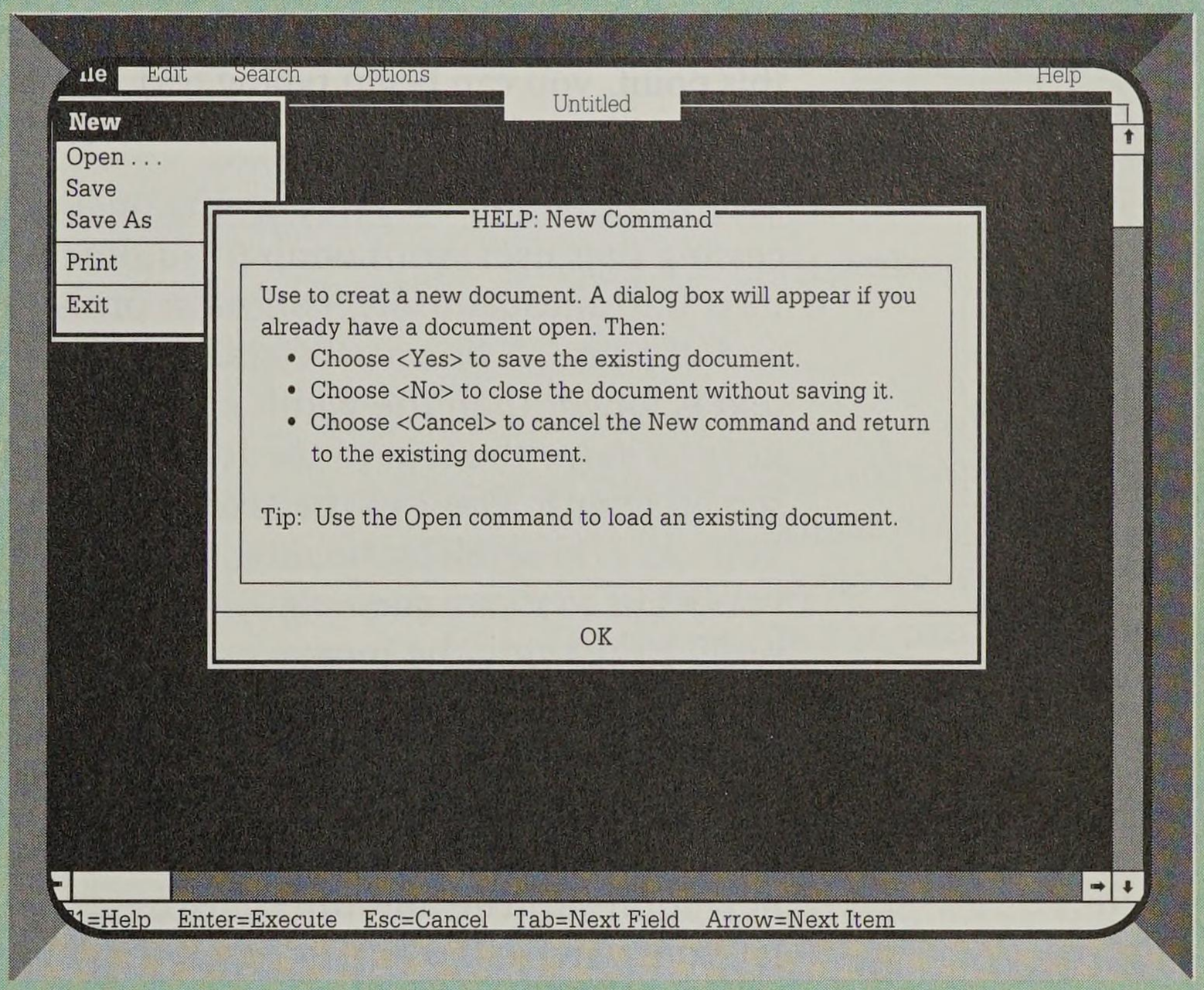
GUIDED TUTORIAL 9-2

Any time you are uncertain of an action you might want to consult help to confirm the selections you plan to make. If you are thinking about selecting File New to create a new file, you can check to see if it is the correct selection by following these steps:

STEP 1 Press Alt-F to activate the File menu.

STEP 2 Highlight **New**, then press F1.

Your screen contains information on how to use the New command as shown below.



STEP 3 Select **OK** to return to the menu.

STEP 4 Press Esc to return to the editing screen.

ON YOUR OWN EXERCISES

1. Practice moving through the Editor's Help menu to get familiar with the topics available. Use Tab and the **OK** button to move through the different levels of help for a main topic. If you have a mouse, try using it to make your selections.

2. Display help for the Copy command on the Edit menu.

CREATE A FILE WITH THE EDITOR

You can use the Editor to create an unformatted text file. When you load the Editor program without a filename, DOS displays a blank Editor screen after you press Esc to leave the introductory screen. At this point, you can begin typing text. The screen notes the column and row position of your cursor in the lower right of the Editor window.

Typing in the Editor is like typing on a typewriter. Unlike word processing that uses word wrap to automatically advance text to the next line automatically, you must press Enter when you reach the end of a line. A line can contain up to 256 characters. If a line of text is longer than the width of the viewing area, you can use scroll keys to move the text to the left or right. If the text is longer than a screen length, you can use scroll keys to move the text up or down. You can also scroll by holding down the arrow key for the direction you want to move the text. If you have a mouse attached, you can scroll by moving the mouse pointer to the scroll bar at the right side of the screen, then dragging the scroll box up or down to see the part of your entries you want to work with. Figure 9-4 shows the scroll bars. *Dragging* requires moving the mouse pointer to the box, then pressing the left mouse button as you move the mouse to a new location. The amount that you drag the scroll box depends how far you want to move. The scroll bar represents your whole document and the scroll box is your relative position in it. To move slower, you can click the arrow keys at the top or bottom of the scroll bar and you will scroll the display one line up or down.

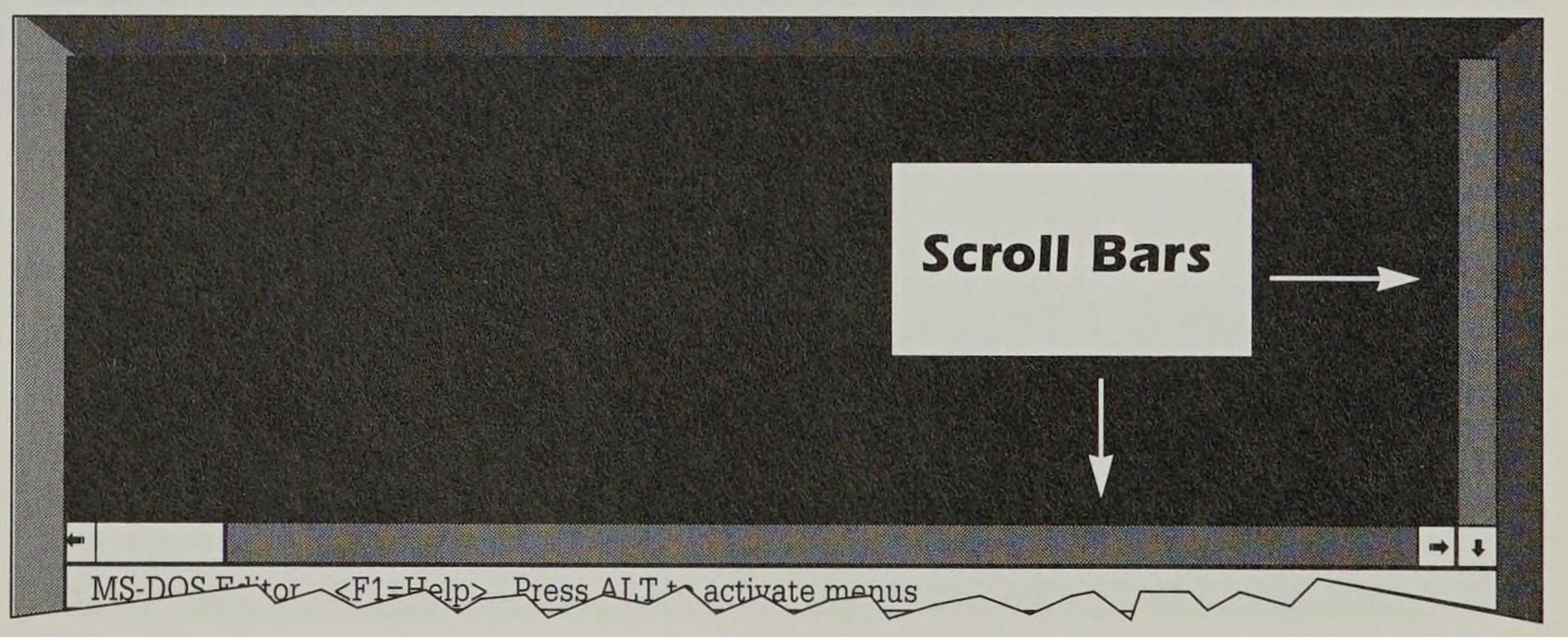


Figure 9-4
Scroll bars

ACTION	RESULT
Ctrl-↑ or Ctrl-Enter↵	Scroll up one line
Ctrl-↓ or Ctrl-X	Scroll down one line
PgUp	Scroll up one screen
PgDn	Scroll down one screen
Ctrl-PgUp	Scroll left one screen
Ctrl-PgDn	Scroll right one screen
Ctrl-Home or Ctrl-Q R	Move to the beginning of the file
Ctrl-end or Ctrl-Q C	Move to the end of the file

Table 9-1
Scroll Keys

For example, you can use the Editor to type the following memo:

TO: Harry Higgins
FROM: Bob Burns
RE: Quality Control Committee
DATE: September 6, 1993

Our company is starting a Quality Control Committee in October. Each department must nominate an employee to the committee to represent his or her department. They will be responsible for bringing his or her co-workers' suggestions to the table and for keeping them informed of the committee's activities and decisions.

The committee will meet at 3:00 on the first Monday of every month, or the first Tuesday if a holiday falls on that Monday. The meetings should last about two hours. Please submit the name of your department's representative by next Friday. Thank you.

You can use the scroll keys to move quickly to various parts of the memo to make any needed changes. You can save the text you typed by pressing Alt-F to activate the File menu and then typing **S** for Save. Type **HH-MEMO.TXT** and then press Enter↵. The text will be saved in a file called HH-MEMO.TXT.

To start another text file, you will want to remove the old one from memory. Since it is saved, you still have a copy of the text on the screen on disk. You can return to this copy later. To remove the copy of the text in memory in the DOS Editor, press Alt-F to activate the File menu and then type **N** for New. The DOS Editor removes the text in the DOS Editor so you can continue using the DOS Editor to create additional text files. The text file in the DOS Editor is cleared when you select New in the File menu or you exit the DOS Editor. If your text file has changes that you have not saved to disk, you will see a prompt about saving the loaded file. Selecting **Yes** to this prompt has the same effect as selecting Save in the File menu.

GUIDED TUTORIAL 9-3

If you use someone else's computer you may not know how to use the word processing application on their computer. You can also be in an airport with a portable computer that does not have a word processing package such as WordPerfect installed on it. If you need to type a letter or note you can always do it since any computer will have DOS installed. As long as the computer has DOS 5 or DOS 6 you can use the Editor to enter your letter. For practice you can follow these steps and complete a letter:

STEP 1 Type the following text, remembering to press Enter↵ when you complete each line.

Hello Paula,

I am having a housewarming party next Friday. I'd like to see you there. The party will start around eight o'clock. My new address is:

(type your address)

See you on Friday!

STEP 2 Place your Work disk in drive A.

STEP 3 Press Alt-F to activate the File menu.

STEP 4 Select **S**ave.

STEP 5 Type **A:PARTY.TXT** and then press Enter↵.

The text will be saved in a file called PARTY.TXT.

STEP 6 Press Alt-F to activate the File menu and then **N** for **N**ew.

This action removes this file from memory so you can create another file. The screen is now empty so you are ready to create more text files.

GUIDED TUTORIAL 9-4

Once you enter and save text with the Editor you can read it again at any time. If you are working with a portable computer you might want to jot down a few notes in a text file, then read them again later.

STEP 1 Type the following text, remembering to press Enter ↵ at the end of each line.

```
Mail phone bill
Wash car
Get groceries
```

STEP 2 Place your Work disk in drive A .

STEP 3 Press Alt - F to activate the File menu.

STEP 4 Select **S**ave.

STEP 5 Type **A:TO_DO.TXT** and then press Enter ↵.

The text will be saved in a file called TO_DO.TXT.

STEP 6 Press Alt - F to activate the File menu, then select New by typing an **N** or by clicking **New**.

The screen is now empty so you are ready to create more text files.

ON YOUR OWN EXERCISES

1. Create the DISRAELI.TXT text file on a work disk containing the following text.

I have brought myself by long meditation to the conviction that a human being with a settled purpose must accomplish it, and that nothing can resist a will which will stake even existence upon its fulfillment.

Action may not always bring happiness; but there is no happiness without action.

2. Create the SOFTWARE.TXT text file on a Work disk. The file should contain the following text that you can later use as a reminder about different types of software.

```
Word Processors - Stores text and lets you customize
the text's appearance. You can create documents
that look like they have been professionally typeset.

Spreadsheets - Manipulates numbers and textual
data. Holds formulas that are always updated to use
the most recent values.

Databases - Stores text and numerical data for work-
ing with large amounts of information.

Graphics - Lets you create and manipulate pictures.
```

3. Create the MAY_TRIP.TXT text file on your work disk containing the following text that uses Tabs to separate the columns.

```
May Trips

May 1 - 3          Orlando
May 8 - 9          Oxford
May 16 - 17        New York
May 21 - 23        Pittsburgh
May 27 - 28        Cincinnati
```

EDIT AN EXISTING FILE

Once a text file has been created, you can make changes to the file by using the edit keys available in the Editor. The edit keys allow you to move around the screen; find and replace text; and select text for moving, copying, or deleting. The scroll keys are also available when editing a file. Table 9-2 lists the edit keys.

When you create a file, you are working in Insert mode, the Editor default. Since Insert is the default mode it means that it is the automatic setting and you do not need to do anything special to set the Editor for Insert mode. When you type a character, it is added at the cursor's position, and then the cursor moves one space to the right. You can insert text between existing characters by moving the cur-

sor to where you want to add text. As you type, the new text shifts the existing text to the right. You have the option of switching to Overwrite mode by pressing Ins or Ctrl-V. In Overwrite mode, the characters you type replace any existing characters. You can switch back to insert mode by pressing Ins or Ctrl-V again.

You can use Tab⇆ to indent text. When you press Tab⇆, the cursor moves to the next tab stop. After pressing Enter↵ to end that line, the cursor moves to the tab stop to indent the next line of text. To end indentation, press ⇧ Shift-Tab⇆. When you use the Tab⇆ key, Ctrl-Q S moves the cursor to the left edge instead of moving to the beginning of the line. The Home key, however, still moves the cursor to the beginning of the line.

ACTION	RESULT
→ or Ctrl-D	Moves the cursor one character to the right.
← or Ctrl-S	Moves the cursor one character to the left.
Ctrl-→ or Ctrl-F	Moves the cursor one word right.
Ctrl-← or Ctrl-A	Moves the cursor one word left.
↑ or Ctrl-E	Moves the cursor up one line.
↓ or Ctrl-X	Moves the cursor down one line.
Home or Ctrl-Q S	Moves the cursor to the beginning of the line.
end or Ctrl-Q D	Moves the cursor to the end of the line.
Ctrl-Enter↵ or Ctrl-J	Moves to the beginning of the next line.
Ctrl-Q E	Moves to the top of the window.
Ctrl-Q X	Moves to the bottom of the window.
Ctrl-N	Inserts a new line at the cursor's position.
Ctrl-M	Inserts a line and move to the beginning of it.
←Bksp or Ctrl-H	Deletes one character to the left of the cursor.
Del or Ctrl-G	Deletes the character at the cursor.
Ctrl-T	Deletes the word at the cursor.
Ctrl-Q Y	Deletes to the end of the line.
Ctrl-Y	Deletes the line.

Table 9-2
Edit keys

The Edit and Search menus contain the commands that you need to edit a file. Most of these operations require you to select text before executing them. Since selected text is highlighted, selecting text is often referred to as highlighting text.

To select or highlight text:

1. Move the cursor to the beginning of the text you want to select.
2. Hold down ⇧Shift, and use the arrow keys to move the cursor to the end of the text you want to select.
3. Release the keys.

You can also select or highlight text by moving the mouse pointer to the beginning location, then pressing the left mouse button and moving the mouse to highlight all the text you want to select. This is referred to as dragging to make the selection. Since all computers have keyboards but not all of them have a mouse, the keyboard directions will be provided in subsequent examples, although you can use either technique if you have a mouse. You can delete selected text by pressing Del or use the commands on the Edit menu to make changes to the text.

FIND AND REPLACE TEXT

You can use the Editor to find text or find and replace it. The Search menu contains the Find command, which locates text in a file. It also contains the Change command, which finds text and replaces it with new text.

To find text:

1. Press Alt-S to activate the Search menu.
2. Select **Find.**

   The Find dialog box is displayed, as shown in Figure 9-5. If text was selected, it appears in the Find What box. Otherwise, the Find What box contains the word at the cursor's location.

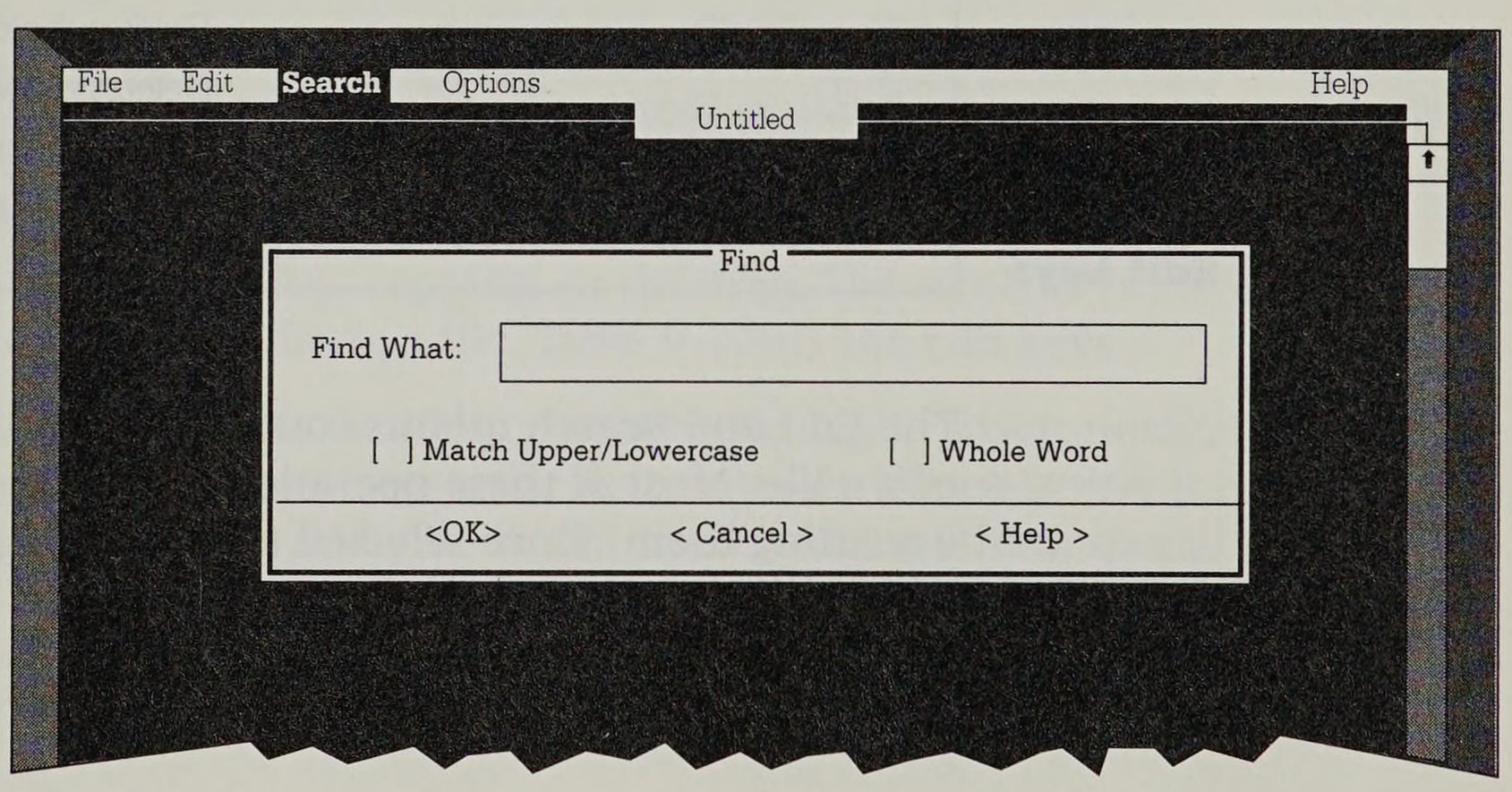


Figure 9-5
Find dialog box

3. You can change the text to search for by typing new text in the box.

4. Select **Match Upper/Lowercase** by pressing Tab and then the spacebar if you want to match capitalization exactly.

   For example, if you search for Baker, the Editor will ignore any occurrences of baker.

5. Select **Whole Word** by pressing Tab and then the spacebar if you want to find separate occurrences of your specified text.

   For example, you may want the Editor to locate occurrences of auto, but not automobile.

6. Select the **OK** button to begin the search.

7. To search for the next occurrence of the specified text, select **Repeat Last Find** from the Search menu, or press F3.

If text was not selected, the Find What box contains the word at the cursor's location.

To find text and replace it with new text:

1. Move the cursor to the beginning of where you want to begin replacing text.

2. Press Alt-S to activate the Search menu.

3. Select **Change**.

   The Change dialog box is displayed, as shown in Figure 9-6. If text was not selected, the Find What box will be blank. You can type the text that you want to replace.

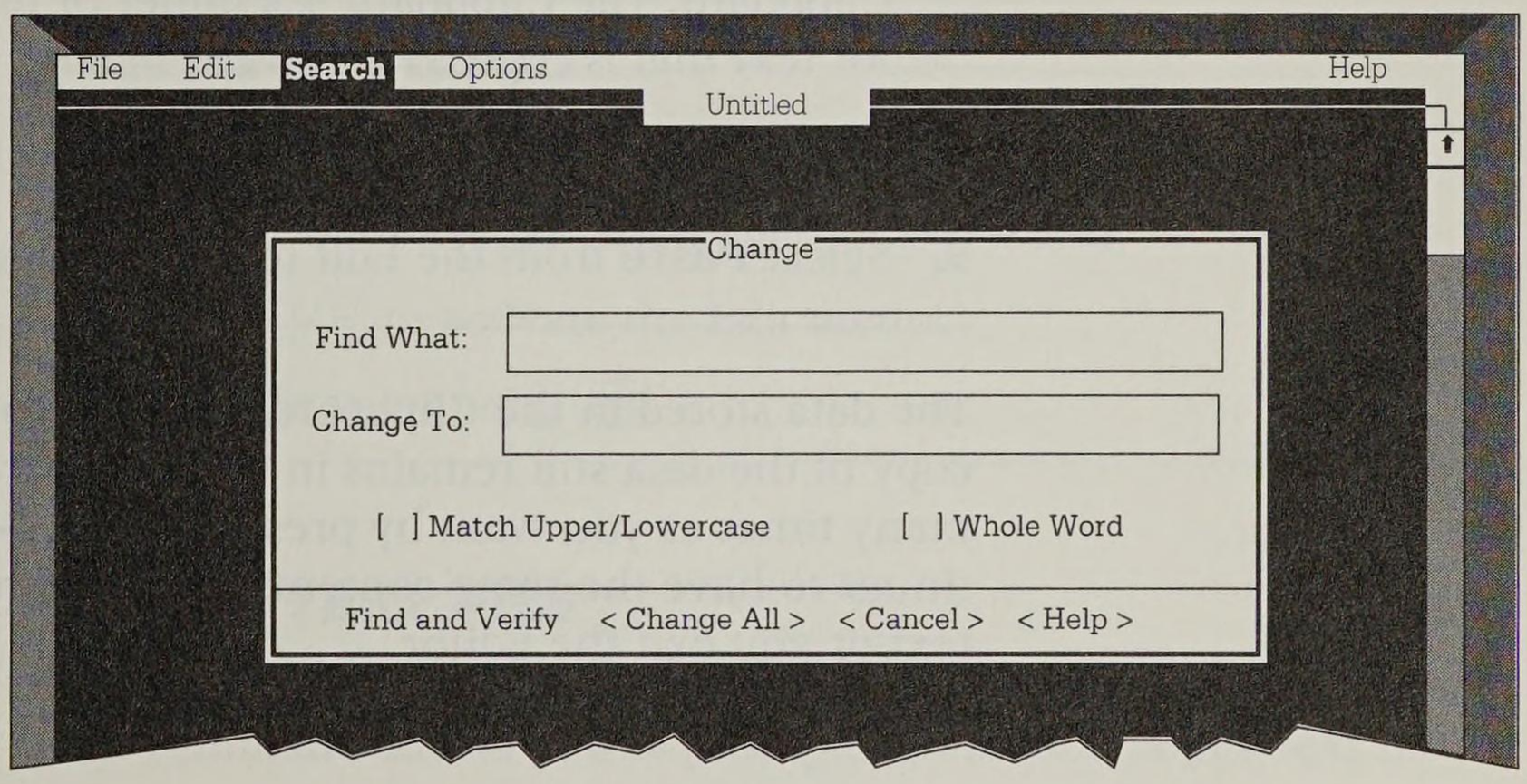


Figure 9-6
Change dialog box

4. In the Change To box, type the text you want to replace the old text with.

5. To match capitalization exactly, press Tab⇆ and then the spacebar to select Match Upper/Lowercase. To replace occurrences where the text is the entire word only, select **Whole Word**.

6. To execute the command, you can select the **Find and Verify** button or the **Change All** button. Find and Verify displays another dialog box for each occurrence where you can press **Change** to change that occurrence and then locate the next, **Skip** to not change this occurrence and locate the next, **Cancel** to end this command without making any changes, or **Help** for more information. Change All automatically changes all occurrences of the specified text.

7. Select the **OK** button from the Change Complete dialog box.

MOVE TEXT

The Editor provides a way to move text from one location to another within a text file.

To move text:

1. Select the block of text that you want to move.

   Remember selected text will appear highlighted.

2. Press Alt-E to activate the Edit menu.

3. Select **Cut**, or press ⇧Shift-Del.

   The text is deleted from the text file and moved to the Clipboard. The Clipboard is a buffer or temporary storage area for text that is copied or moved.

4. Move the cursor to the new location in the file.

5. Select **Paste** from the Edit menu, or press ⇧Shift-Ins.

The data stored in the Clipboard is moved to the new location. A copy of the data still remains in the Clipboard so you can insert it as many times as you want by pressing ⇧Shift-Ins. The Clipboard continues to have the same contents until you replace it with different text or you exit the Editor.

COPY TEXT

As with the move procedure, the copy procedure requires two commands, Copy and Paste, to copy text from one location to another within a text file.

To copy text:

1. Select the block of text you want to copy.

   The text will be highlighted when it is selected.

2. Press Alt-E to activate the Edit menu.

3. Select **Copy,** or press Ctrl-Ins.

   The selected text is copied to the Clipboard. The text in the original location still remains.

4. Move the cursor to the new location in the file.

5. Select **Paste** from the Edit menu, or press ⇧Shift-Ins.

The data stored in the Clipboard is copied to the new location. A copy of the data still remains in the Clipboard so you can insert it as many times as you want by pressing ⇧Shift-Ins until you replace it with text that will be copied or moved or you exit the Editor.

CLEAR TEXT

You can delete text using the various edit keys described in Table 9-2. If you have a block of text that you want to delete, you may find yourself repeating these keys until all the text is deleted from the file. With the Editor, you can select a block of text and use the Clear command to delete it. The Clear command does not affect text stored in the Clipboard.

To delete a block of text:

1. Select the text you want to clear.

   The text will be highlighted when it is selected.

2. Press Alt-E to activate the Edit menu.

3. Select **Clear,** or press Del.

PRINT A TEXT FILE

After creating or editing a text file, you may wish to print it. The Print command allows you to print part or all of an open text file or

to print a Help screen. To use this command, your system must be connected to a printer (LPT1).

To print a file:

1. The file must be open. If printing only a portion of the file, select or highlight the block of text to be printed.
2. Press Alt-F to activate the File menu.
3. Select **Print**. The Print dialog box is displayed.
4. Select **Selected Text Only** to print a block of selected text, or select **Complete Document** to print the entire file.
5. Select the **OK** button.

To print a Help item:

1. Select **Getting Started** or **Keyboard** from the Help menu.
2. Select the Help topic you want to print.
3. Move the cursor inside the Help window. To print a block of Help information, select the block of text.
4. Select **Print** from the File menu.
5. Select **Selected Text Only** to print a block of selected text, or select **Current Window** to print the entire Help window.
6. Select the **OK** button.

SAVE A TEXT FILE

The Editor provides two ways to save a text file once you are through adding text or making changes. You can save a file using its original name or save it under a new name. If you do not save a file before exiting the Editor, you will be prompted at that time if you want to save or disregard new changes. It is recommended that you save a file often during a working session in order to protect your time invested in case of a power failure or other hardware problems.

To save a new file or an existing file:

1. Press Alt-F to activate the File menu.
2. Select **Save**.

   The Save dialog box is displayed. If you are saving an existing file, the current contents of the screen are saved, overwriting the copy on disk.

3. To save a new file, type the filename. If you want to save the file to another drive or directory, select the drive or directory in the Dirs./Drives box, or include it in the path.

4. Select the **OK** button.

To save an existing file under a new filename:

1. Press Alt-F to activate the File menu.

2. Select **Save As**.

   The Save As dialog box is displayed.

3. Type a new filename in the File Name box. If you want to save the file to another drive or directory, select the drive or directory in the Dirs/Drives box, or include it before the filename in the File Name box.

4. Select the **OK** button.

OPEN A FILE

The Editor allows you to open several types of files. You can open files created in the Editor, other unformatted text files such as AUTOEXEC.BAT and CONFIG.SYS, and formatted text files created with another text editor. A formatted file may lose the function of any special codes when the file is opened in the MS-DOS Editor.

To open a file:

1. Press Alt-F to activate the File menu.

2. Select **Open**. The Open dialog box is displayed, as shown in Figure 9-7 on page 234.

3. Type the filename in the File Name box, or select a file from the Files box.

   If the file you entered is not on the current drive or directory, include the path with the filename. You can view the contents of another drive or directory by moving to the Dirs/Drives list. When you select a drive or directory from the Dirs/Drives list, the Files box shows the files in the current drive and directory with a .TXT extension.

4. Select the **OK** button when the correct filename appears in the File Name box.

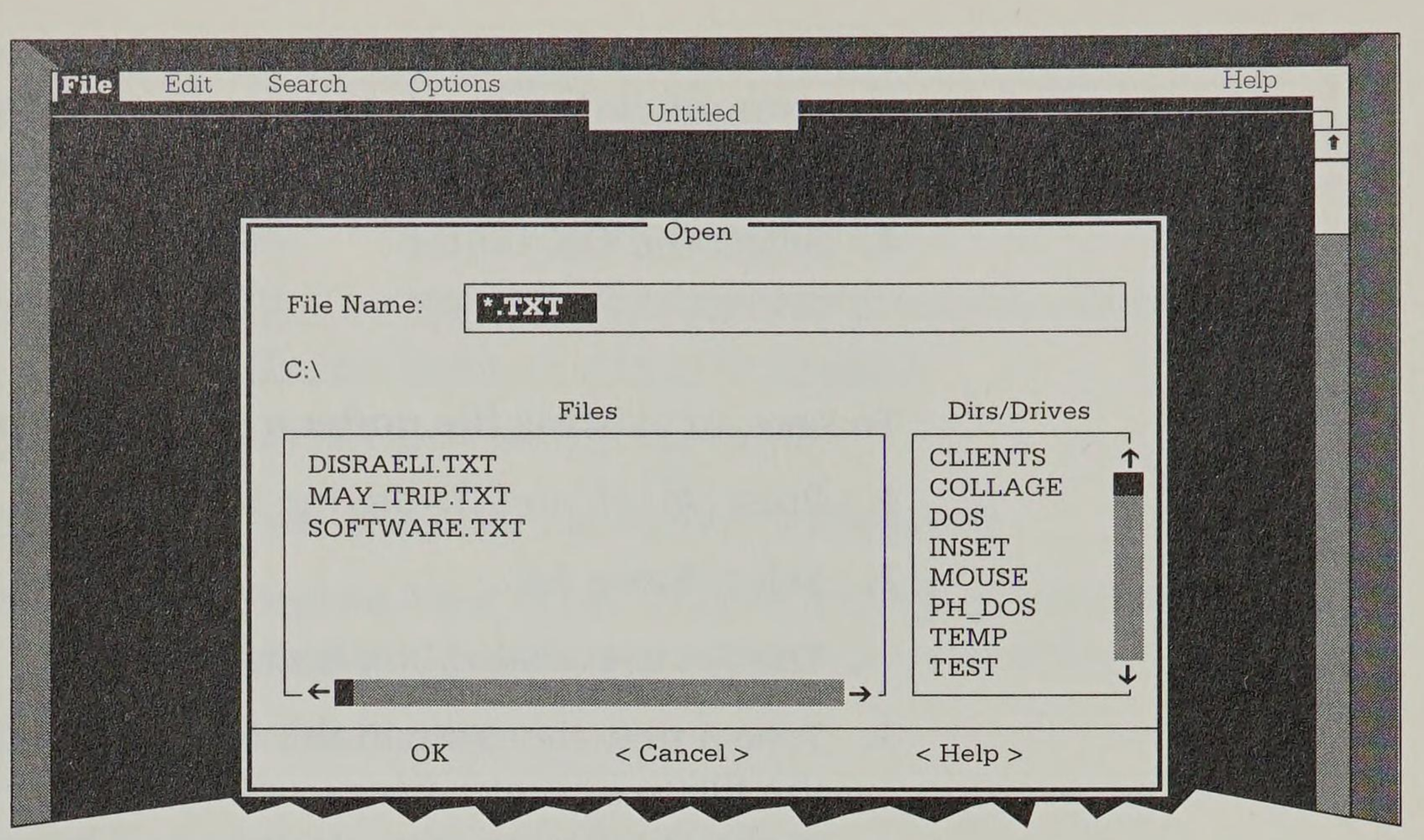


Figure 9-7
File Open dialog box

QUIT THE EDITOR

When you are through working in the Editor, you can close your file and exit the program. The Editor provides a safeguard for closing a file before saving any changes. You will be asked to save any new or changed text since your last save before exiting the Editor.

To exit the Editor:

1. Press Alt-F to activate the File menu.
2. Select **Exit**.

If you did not save new changes to the file, the Editor will prompt if you want to save them or disregard them. Select the **Yes** button to save the changes or the **No** button to disregard them. If the Editor was started from the command prompt, you will return to the command prompt. If the Editor was started from the Shell, you will return to the Shell.

GUIDED TUTORIAL 9-5

As you review the data in a file you may need to look at different parts of the file to see all the data you want to look at. The Editor makes it easy for you to do this. You can move around a text file in the Editor by using the scroll keys. You can try out the various options for moving the cursor in a text file with one of the files from your Student disk, TEXT3. The techniques you learn can be used with any file.

STEP 1 Open the file TEXT3 from the Student disk by pressing Alt-F for the File menu and selecting **Open**.

STEP 2 Type **A:TEXT3** and select the **OK** button. If you are not in the Editor, type **EDIT A:TEXT3** at the command prompt and press Enter↵.

STEP 3 Once the file appears on the screen, you can press PgDn to move to the next screen and PgUp to move back to the previous screen.

STEP 4 Press End to move to the end of the title and Home to move back to the beginning of the line.

STEP 5 Press Ctrl-→ a couple of times to move word by word.

STEP 6 Press Ctrl-Enter↵ to move to the beginning of the next line.

STEP 7 Press Ctrl-Q and then X to move to the bottom of the window.

GUIDED TUTORIAL 9-6

As you enter text in a file, the order you use can sometimes be improved. Your changes may better organize the text, create a logical plan of action, or simply improve readability. You can move text from one location to another once you have typed it with the Editor. You can practice these techniques and use then whenever you need them with other text files.

STEP 1 With TEXT3 displayed on your screen, move the cursor to the beginning of the second paragraph.

STEP 2 Select the second paragraph by holding down ⇧Shift and pressing ↓ until the paragraph is highlighted.

STEP 3 Press Alt-E to activate the Edit menu, and then press Enter↵ to select **Cut**.

Notice that the paragraph has been removed from the file. The text is currently stored in the Clipboard.

STEP 4 Press Ctrl-End to move to the end of the file.

STEP 5 Press ⇧Shift-Ins (or select **Paste** from the Edit menu) to retrieve the text from the Clipboard.

GUIDED TUTORIAL 9-7

As you enter text you may have sections that are the same or very similar. You may find it much quicker to copy the first section then edit it, rather than typing the same text twice. The editor will make copies of selected text for you. You can also print text with the Editor. This allows you to verify changes after they are made. You can try copying and printing using the TEXT3 file in the text Editor.

STEP 1 Press Alt-F for the Files menu and then select **Print**.

STEP 2 With **Complete Document** selected, press Enter↵ to select the **OK** button.

You now have a printed copy of the poem.

STEP 3 Move the cursor to the beginning of the first paragraph.

STEP 4 Select the first paragraph by holding down ⇧Shift and pressing ↓ until the paragraph and the blank line between the paragraphs is highlighted.

STEP 5 Press Alt-E to activate the Edit menu, and then select **Copy**.

At this point, the document does not look any different, but now the Clipboard contains a copy of the first paragraph rather than the second.

STEP 6 Move to the beginning of the third paragraph by pressing ↓.

STEP 7 Press ⇧Shift-Ins (or select **Paste** from the Edit menu) to retrieve the text from the Clipboard.

STEP 8 Move to the paragraph that starts "We paused before a house" then press ⇧Shift-Ins.

Now the document contains two copies of the selected paragraph as well as the original.

GUIDED TUTORIAL 9-8

After typing a document you might notice that you have made a mistake in the spelling of a word or you may want to change some text that appears in several places. You can correct occurrences individually but when you have several entries to change you may find that the Editor's search and replace feature can save you time. It is also error free since it will never miss an occurrence. You can try the search and replace option in the Editor:

STEP 1 With TEXT3 displayed on your screen, press Ctrl-Home to move to the beginning of the file.

STEP 2 Press Alt-S and then select **Change** from the Search menu.

The Change dialog box is displayed.

STEP 3 To find every occurrence of the word passed, type **passed** in the Find What box.

STEP 4 Press Tab↹ to move to the Change To box.

STEP 5 Type **went through**, and then press Tab↹ until you highlight "Change All."

STEP 6 Press Enter↵.

All occurrences are now changed.

STEP 7 Press Enter↵ again to select the OK button and return to the editing screen.

STEP 8 Press Alt-F and then select **Exit.**

STEP 9 Press Tab↹ to to select the NO button to disregard changes, and then press Enter↵.

ON YOUR OWN EXERCISES

1. Open the file PACOLLGE on your Student disk. Change all occurrences of University to College. Print the file. Then exit without saving your changes.

2. Open the file PHILSPHY.TXT on your Student disk. Select the text for the American Philosophers group, and move the entire group to the end of the file. Go back to the beginning of the file, and paste the text again from the Clipboard.

3. Using the PHILSPHY.TXT file from Exercise 2, select the British philosophers group, and copy the group to the end of the file. Move to the end of the file again, and paste the text again. Delete the first occurrence of the British philosophers' group. Then exit without saving your changes.

4. Edit the BACKPACK.TXT file in your Student disk. Move the two lines for RSVP for events to the end of the file. Change overnight to Overnight in the two instances where it is used. Add the text below to the line below 1994 Schedule:

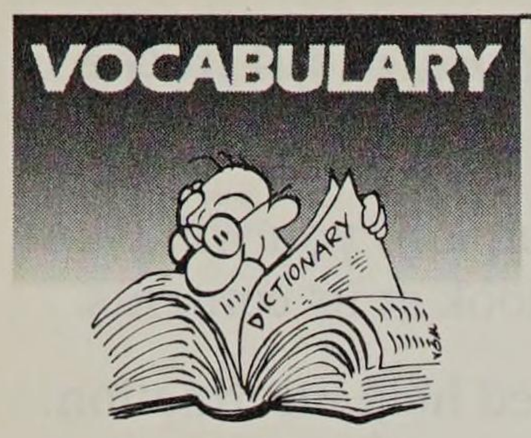
> For last minute updates on trips (such as weather cancellations), call Paul Galloway at 555-3752.

Print the file and then save the modified contents.

IMPORTANT EDITOR OPTIONS

You can change some of the ways the Editor works. The Options menu contains a Display command with selections that allow you to customize how the Editor works.

To change the screen colors, use the arrow keys to select the color you want. The number of spaces each Tab uses is eight. You may consider changing it to five spaces, which is more appropriate for indenting paragraphs when typing letters and memos. The tab settings affect only the Editor. You can select or deselect if you want the scroll bars to display; they are generally used with a mouse. If you use DOS on a hard disk, the Editor files are stored in the DOS subdirectory. If \DOS is included in your PATH statement, you do not need to tell DOS where the EDIT.HLP file is located. This file contains the help messages that are displayed on the screen.



Clipboard

A buffer or temporary storage for text being copied or moved within a text file. Data is copied or cut from a text file to the Clipboard and is then copied to the new location when you retrieve it with the Paste command. The data in the Clipboard is not replaced until you copy or move new text or you quit the Editor.

Editor

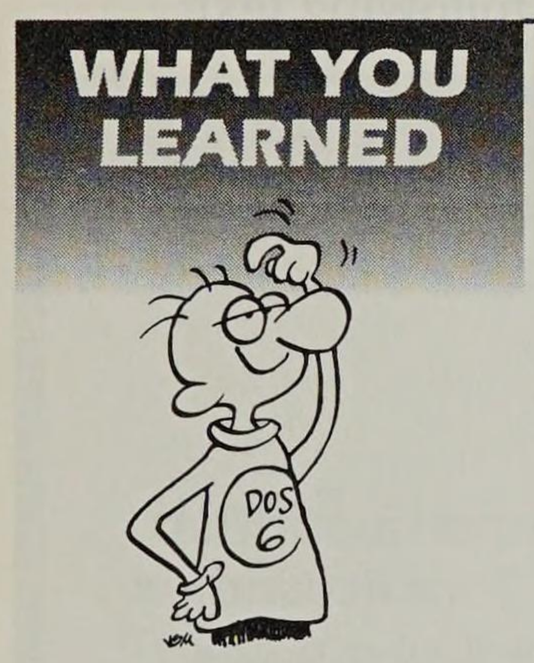
The MS-DOS full-screen text editor for creating and editing unformatted text files. The Editor can also edit formatted files but ignores any special codes. The Editor replaces the Edlin editor.

Edlin

A line-oriented text editor used in previous versions of DOS, though it is still available in MS-DOS 6.0.

Scroll

Moving the cursor directly to a specified location using key combinations instead of one character or one line at a time using the arrow keys. These key combinations are helpful when text scrolls off the viewing area.



In this chapter, you learned the following:

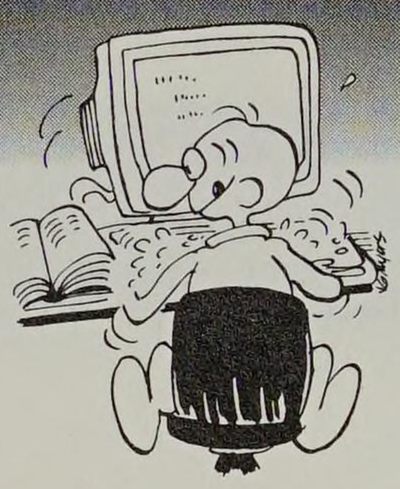
- How to start and quit the DOS Editor to work with text files.
- How to move through a text file in the DOS Editor.
- How to find text in a text file.
- How to rearrange text by copying and moving text through the Clipboard.
- How to open a text file you have already saved.

REVIEWS QUESTIONS

Answer each of the following with *true* or *false*, or fill in the blank.

1. When you want to look at a Word text document, you will want to use Word rather than the DOS Editor to look at its contents.
2. Pressing _____ displays the Getting Started help information.
3. To go to the top of the text in the Editor, press _____.
4. When you search for *text* in the Editor, the Editor will find *texture* if Whole Word is not selected.
5. The Clipboard only keeps its contents until you paste it into a text file.
6. The Clipboard's contents are removed when you leave the Editor.
7. The dialog box for opening a file initially lists all files in the current drive and directory that do not have a file extension.
8. List some of the differences between Edlin and the Editor.

IN THE LAB



1. Using a Work disk, create a new file for the following text:

December 10, 1993

Mr. Walter Jones
321 Fernway Road
Mytown, OH 44444

Dear Mr. Jones:

It has come to the attention of the Credit Department that your account is falling behind in payments. Your account is currently $300.00 overdue. In the best interest of our customers, we are working out payment agreements to bring accounts up to date. We will contact you to arrange a payment plan that is within your current budget.

If you have already sent us your payment, please disregard this notice. We hope to continue our good relationship and appreciate all of your past patronage.

Sincerely,

Jack Johnson
Credit Manager

Save the file as JONES.TXT.

2. Edit the file JONES.TXT by changing the name and address and the salutation to:

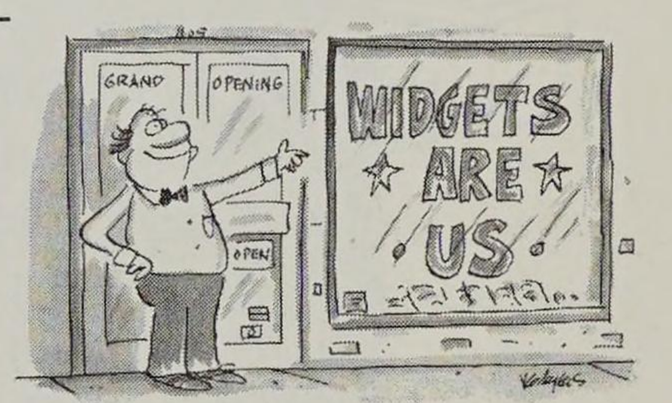
```
Mrs. Sally Brown
5980 North Boulevard, #2B
Cleary, PA 53210

Dear Mrs. Brown:
```

3. Move the last paragraph to after the second sentence in the first paragraph. Then, move the following text so that it becomes the last paragraph: *In the best interest of our customers, we are working out payment agreements to bring accounts up to date. We will contact you to arrange a payment plan that is within your current budget.*

   Save the file as BROWN.TXT.

4. Print the files JONES.TXT and BROWN.TXT, and then exit the Editor.

5. You are about to start a small business called WIDGETS ARE US and you need to write to several organizations that are available to assist fledgling businesses. Complete the following steps to create two letters your company will use to obtain information.



   a. Create a letter with the following text:

```
Date

Your Address
City, State  ZIP Code


Ohio Small Business Administration
12 Circle Drive
Columbus, OH  44084

Sir or Madam,

I am starting a small business preparing widgets for export-
ing. I am contacting your organization to obtain information
about the information pamphlets your organization might
have available for my business. Please send me information on
the assistance your organization offers to assist my business.

Sincerely,


Your Name
```

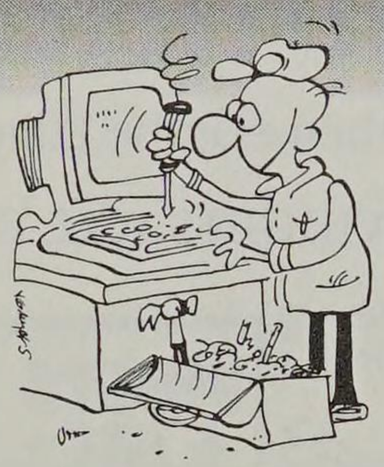
b. Print and save the letter as OSBAHELP.TXT

c. Copy the OSBAHELP.TXT file containing the letter to COSEHELP.TXT.

d. Edit the copy of the letter in the file to change the letter's recipient to the Council of Smaller Enterprises at Tower City Centre, Cleveland, OH 44113.

e. Print the copy of the letter and save the changes.

THINKING ON YOUR FEET



You are on your way back from a job interviewing trip where you met with the following people:

Jim Johnson	**Clark Savings and Loan**
Mary Jenkins	**New Wave Bank**
Sandy Davis	**High Finance Investments**

When you get back to school you will have a lot of classwork to catch up with, so you would like to get your thank-you letters to the companies you visited completed while in the airport. You have a portable computer with you that has DOS 6 installed. Create a letter, and then tailor it to each of the companies. Be creative. In today's competitive job market the practice may improve more than just your DOS skills!

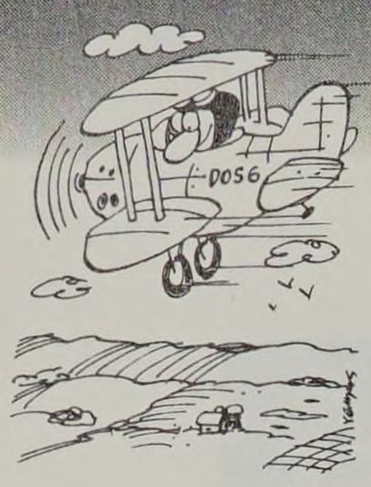
CHAPTER 10

CREATING BATCH FILES

After completing this chapter, you will be able to:

- Explain what a batch file is and what its advantages are.
- Create a simple batch file.
- Execute a batch program.
- Display a message on the screen.
- Use the PAUSE command.
- Document a batch file.

OVERVIEW



Up to now, you have learned a number of DOS commands to do different tasks. The more you work with DOS, the more you may be repeating commands to do the same task. You can eliminate repetitive steps by creating a batch file to store a series of DOS commands. When you need to perform these tasks, you enter only one command to run the program.

Most users have a batch file called AUTOEXEC.BAT in the root directory of their system. Using this special name and storing the file in the root directory causes DOS to execute the instructions it contains when you boot your system.

WHAT IS A BATCH FILE?

A batch file is an unformatted text file that contains a series of DOS commands. When the batch file is executed, these commands will be processed together as a batch instead of separately. Storing a sequence of commands in a batch file can save a considerable amount of time. Rather than type each command all you need to do is type the name of the batch file.

A batch file can be created using the COPY command, the DOS Editor, Edlin, or a word processing package that can write the data to an ASCII text file (unformatted text file).

The box for "The Inside Scoop on Batch Files" provides some additional information on how DOS is able to use the commands they contain.

THE INSIDE SCOOP ON BATCH FILES

You can store a series of DOS command entries in a file. You need to enter one command per line and check the syntax of your entries carefully as DOS will have the same difficulties with errors as it does when you type the commands in at the DOS prompt. When you are finished making entries you will need to save the file with a filename extension of .BAT to identify it as a batch file. You will want to be sure you use a name for the file other than a DOS command name. If you use a DOS command name, DOS will never find the entries in your batch file due to its procedure for processing your request when you type the filename to execute the commands.

To execute the sequence of batch file instructions, type the name of the file at the DOS prompt. This is the way that DOS processes your entry:

- DOS checks your entry to see if it matches one of the internal DOS commands. If there is a match DOS will execute the command.
- DOS appends .EXE and .COM to the name that you typed and searches for this entry.
- DOS appends .BAT to the name that you typed and searches for it.

ADVANTAGES OF USING BATCH FILES

- They speed up your work by storing entries that can be used over and over again.
- They allow you to customize DOS by executing commands that you need.
- They provide DOS capabilities to users who are not familiar with DOS commands.

RULES FOR NAMING BATCH FILES

When creating a batch file, you must follow certain rules for naming your file. A batch filename must be a valid DOS filename. It can be up to eight characters long, and it must contain the extension .BAT. (See Chapter 4 for more details on filename rules.)

A batch file cannot be the name of an internal DOS command, an internal batch file, or another batch filename. The filenames you should not use are BREAK, CALL, CD, CHCP, CHDIR, CLS, COPY, CTTY, DEL, DATE, DIR, ECHO, ERASE, EXIT, FOR, GOTO, MD, MKDIR, PATH, PAUSE, PROMPT, RD, REM, RENAME, RMDIR, SET, SHIFT, TIME, TRUENAME, TYPE, VER, and VOL. If you use one of these command names as a batch filename and store your file in the DOS directory, DOS will execute the command instead of the batch file when you try to execute it.

You should also avoid assigning a program name (which contains the .COM or .EXE extension) to a batch file. These files are always executed first; therefore, your batch file will not be executed.

CREATING A SIMPLE BATCH FILE

To create a short batch file, you can use the COPY command. By indicating the device name CON, you are instructing DOS to copy your instructions (which also appears on the monitor) from the keyboardto the new file.

You can create a batch file that will format a disk to work in a different density disk drive. For example, your computer system contains a high-density drive, and you need to send a disk containing data to a user who has a low-density drive. You can create a batch file that will format a 360K floppy disk in a high-density drive instead of having to remember the format command with its optional switches. To create file F360K.BAT, you would type:

COPY CON F360K.BAT

After you press Enter↵, you can begin typing the DOS commands that will perform the task you want. For this example, you would type:

format a: /f:360

Before pressing Enter↵ to end the line and save it to the file, make sure it is correct. One drawback of using the COPY command to create a batch file is that it does not allow you to make changes to previously typed lines. For this reason, it is recommended that you use the Editor, Edlin, or a word processing package when creating batch files that are longer than a few lines. You can also use these programs to later modify or edit your batch files. To close this file, press F6 or Ctrl-Z to generate the ^Z at the end of the file. Then press Enter↵ again, and DOS will display the message:

```
1 file(s) copied
```

Figure 10-1 shows how this batch file looks on the screen.

```
C:\>COPY CON F360K.BAT
format a: /f:360
^Z
        1 file(s) copied

C:\>
```

Figure 10-1
The format batch file displayed

EXECUTING A BATCH PROGRAM

You can execute a batch program from the command prompt or from the DOS Shell and obtain the same results. When you run a batch file, you may still need to respond to a command's prompts for the commands in the batch file. For example, when you run F360K.BAT, you must respond to prompts for putting a disk in the drive, the disks' label, and whether you want to format another disk. You cannot include these prompt responses in your batch file. If you are at the command prompt, it is quicker to type the filename. If you are already in the DOS Shell, it is easier to run the program from there.

To run a batch file from the command prompt:

1. Type the filename without the .BAT extension. For example, to run file F360K.BAT, you would type **F360K**.
2. Press Enter↵.

To run a batch file from the DOS Shell:

1. Press Alt-F to activate the File menu.
2. Select **Run**.

   The Run box is displayed.
3. Type the name of the batch file. For example, to run file F360K.BAT, you would type **F360K**.
4. Select the **OK** button.

   DOS will execute the program and display the results.
5. Press any key to return to the DOS Shell.

To run a batch file from the DOS Shell using an alternative method:

1. Select the file from the file list.
2. Press Alt-F to activate the File menu.
3. Select **Open**.

   DOS will execute the program and return you to the DOS Shell when it is completed.

INTERRUPTING OR CANCELING A BATCH PROGRAM

You can temporarily stop a batch program by pressing Ctrl-S or the Pause key. This suspends the program from processing until you press Ctrl-S or **Pause** again. This can be useful—for example, if you need to insert a disk after a batch program has been started in order for it to successfully complete its task.

You can also stop or cancel a batch program by pressing Ctrl-C or Ctrl-Break. DOS displays a message asking if you want to stop the batch program. Type **Y** to cancel the program or **N** to continue with the next command in the batch program.

GUIDED TUTORIAL 10-1

You can create a batch program to copy all the .TXT which begin with the letters "TEXT" from your Student disk to a Work disk in drive A. You might want to do this if you had been working with these files all day and wanted a backup. Since you are using one disk drive for this exercise and swapping the source and target disk as requested, you should write-protect your Student disk during this exercise. To accomplish this you would slide the write-protect tab toward the outside edge of the disk with a 3½-inch disk or cover the notch on a 5¼-inch disk. To create this batch program, follow these steps:

STEP 1 Place your Student disk in drive A.

STEP 2 Type **COPY CON TEXT.BAT** and press Enter↵ to create a batch file named TEXT.BAT.

STEP 3 Type **COPY A:TEXT?.TXT B:** and press Enter↵.

STEP 4 Type **DIR B:** and press Enter↵.

STEP 5 Press F6 or Ctrl-Z to generate a ^Z at the end of the file.

STEP 6 Press Enter↵ to create the file and generate the "1 file(s) copied" message.

STEP 7 Type **TEXT** to execute the batch file. DOS will display each file as it is copied. After all the files are copied, it will display the contents of the Work disk.

GUIDED TUTORIAL 10-2

After you use the computer for awhile, you will probably find that you have data on many different disks. You can use the DIR command to take a closer look at disk contents. You can sort the output to make it easier to find a specific file or print a copy of it. To create a batch file named PRNT.BAT, which displays a sorted directory listing then prints the directory without sorting it, follow these steps:

STEP 1 Type **EDIT PRNT.BAT** at the DOS prompt and press Enter↵. You are now in a new file in the Editor.

STEP 2 Type the following lines pressing Enter↵ after each:

```
DIR | SORT
DIR > PRN
```

Type F6 to end the batch file.

STEP 3 Press Alt-F, type **S** to select **S**ave, type **PRNT.BAT**, then press Enter↵.

STEP 5 Press Alt-F and type **X** to select E**x**it.

STEP 6 Type **PRNT** to execute your batch file and check the results.

ON YOUR OWN EXERCISES

1. Write-protect your Student disk by sliding the tab or covering the notch to protect against mistakes. Create a batch program to copy all the files from your Student disk in drive A to the Work disk that you will place in drive A when requested. Use .BAK for the filename extension for the copied files.

2. Create a batch file that displays the current DOS version number, the current date and time, lets the user change them, then clears the screen.

BATCH FILE COMMANDS

A batch program can contain many of the DOS commands you learned earlier as well as more advanced commands you have not been introduced to. There are also eight DOS commands designed specifically for batch programs. In this chapter, we cover three of them: ECHO, PAUSE, and REM.

USING ECHO

When you create a batch program, DOS defaults to displaying the commands as they are processed along with any output the command generates. Depending on the situation, this can be helpful or confusing, especially to someone not familiar with DOS commands.

Using ECHO OFF and ECHO ON

DOS provides two options that allow you to customize a batch file for command message suppression by using the ECHO OFF command. You can suppress the display for all the commands that follow a specific point in the file or for specific commands only. You can also use the ECHO ON command to restore the display feature that has been turned off with the ECHO OFF command.

To stop the display for all commands that follow:

1. Move the cursor to the line before where you want to start suppressing commands in the file.
2. Type **ECHO OFF**.
3. To prevent ECHO OFF from displaying, type **CLS** on the next line. CLS clears the screen of all previous commands.

To stop the display for a specific command:

1. At the beginning of the line, type @ (at symbol).
2. Type the command for that line. For example, to suppress the COPY command, you would type **@COPY**.

If you use the @ symbol with the ECHO OFF command, you do not need to use the CLS command, since the @ symbol suppresses all data on that line.

DOS also provides the ECHO ON command to restore the display feature. For example, if you used ECHO OFF to suppress the first two commands in a file, you can use the ECHO ON command after the second command to display the commands that follow.

Your batch file might contain these entries:

```
ECHO OFF
COPY OFFICE1.TXT B:
COPY OFFICE2.TXT B:
ECHO ON
DIR B:
```

When this batch file is processed, you will see a screen display as in Figure 10-2:

```
A:>ECHO OFF
      1 file(s) copied
      1 file(s) copied
A:>DIR B:

Volume in drive B has no label
Volume Serial Number is 253D-19E0
Directory of B:\
OFFICE1  TXT       147 11-22-93  12:44p

OFFICE2  TXT       142 10-01-93   2:50p
      2 file(s)       289 bytes
                   355328 bytes free
```

Figure 10-2
Running a batch file using ECHO

Displaying the Status of ECHO

To display the current setting for ECHO, type ECHO at the DOS prompt. The screen will display one of the following messages, depending on whether ECHO OFF or ECHO ON was entered last:

```
ECHO is off
ECHO is on
```

Displaying Other Information

The ECHO command can display other types of information after an ECHO OFF command. For example, you may want to display a line of instruction telling the user to take some type of action in order to continue the batch program. You can also use this command to display a list of menu options that the user can choose from.

For example, you can add the following information at the beginning of a batch file that will format a 360K disk in a high-density drive:

```
ECHO OFF
CLS
ECHO This program formats a 360K disk in a high-density drive
ECHO Place a 360K disk in drive A
```

In this sequence of commands, the ECHO OFF command must come first. The CLS command clears the screen and displays the ECHO messages at the top of your screen. The display looks like:

```
This program formats a 360K disk in a high-density drive
Place a 360K disk in drive A
C:\DOS>
```

Adding Blank Lines

When your batch files become more involved, you may find them more difficult to read. DOS provides another feature for the ECHO command that allows you to add blank lines within a batch program. This is especially helpful when you create menus for other users by improving the readability of the screen. To add a blank line, type **ECHO.** (ECHO followed by a period) at the beginning of the line. When DOS sees this command during program execution, it displays a blank line on your screen.

USING PAUSE

To make the ECHO command more effective when displaying messages to users, DOS allows you to pause a batch program during execution in order to instruct the user to take appropriate action at that time. Since you cannot pause a program through the keyboard, you can enter the PAUSE command where you want DOS to stop program execution. When DOS encounters a PAUSE command, it displays the message:

```
Press any key to continue...
```

When the user presses any key, the program continues to process from after the PAUSE line. This command usually follows an ECHO statement that contains the instructions for the user. For example, you can enter the following:

```
ECHO OFF
CLS
ECHO Place a blank disk in drive A
PAUSE
COPY *.TXT A:*.BAK
```

Your screen would look like:

```
Place a blank disk in drive A
Press any key to continue...
```

In this example, CLS cleared the screen of any previous commands, and then displayed the ECHO statement at the top of the screen. The PAUSE command momentarily stopped the program during execution and displayed the "Press any key" message. This gives the user time to carry out the instructions before continuing the program.

USING REM

When you create a batch program that is longer than a few lines, it is often helpful to add comment lines that explain what the program or parts of the program will do during execution. This is helpful to remind you, or others who will use this program, of the purpose of the batch file. You can type up to 253 characters in one REM statement although it is easier to read the program if you enter REM at the beginning of each new line.

You can place the REM command anywhere in the program. When DOS executes the program, these lines are ignored and do not display on your screen. It is often helpful to place a REM line before major sections of the program. You can also add blank lines by entering REM by itself to improve the readability of the program.

You can display the REM command lines by using the DOS Editor, Edlin, the TYPE command, or the PRINT command.

For example, you can add the following remarks to describe the format batch file:

```
REM F360K.BAT
REM This program formats a 360K disk in a high-density drive
```

GUIDED TUTORIAL 10-3

Although batch files are meant for repetitive procedures, you could use them to copy certain files to a disk in drive A each day. You can practice with the batch file commands by creating a batch file that displays a message to the user as it copies files from one location to another. Follow these steps to create this batch file.

STEP 1 Place your Student disk in drive A.

STEP 2 Type **EDIT ECHOCOPY.BAT** and press Enter↵ to start the DOS Editor and to tell the DOS Editor that you want to create a text file named ECHOCOPY.BAT.

STEP 3 Type the following batch file commands.

```
ECHO OFF
ECHO This program copies files from two directories to drive A
ECHO.
COPY sales\report\*.* a:*.bak
COPY sales\letters\*.* a:*.bak
```

This batch file uses the ECHO command to display a message to the user. The message and the COPY statements are separated by ECHO, which will display a blank line on the screen.

STEP 4 Press Alt-F and then type **X** for Exit.

STEP 5 Select **Yes** when the Editor prompts for whether you want to save the file.

GUIDED TUTORIAL 10-4

When you write a batch file to be used by another user, you may want to perfect it a little more. Messages displayed to the user can tell them exactly what to do. You can even pause for an action. You can create a batch file that pauses during execution to allow the user to insert a disk, you can include a PAUSE command in the batch program. Follow these steps to create this batch file:

STEP 1 Place your Student disk in drive A.

STEP 2 Type **EDIT WAITCOPY.BAT** and press Enter↵.

This action starts the DOS Editor and tells the DOS Editor that you want to create a text file named WAITCOPY.BAT.

STEP 3 Type the following batch file commands:

```
ECHO OFF
ECHO This program copies files from two SALES directories
ECHO to drive A
ECHO.
ECHO Insert the disk labeled SALES1 in drive A
PAUSE
COPY sales\report\*.* a:*.bak
ECHO Insert the disk labeled SALES2 in drive A
PAUSE
COPY sales\letters\*.* a:*.bak
CLS
ECHO This list includes the files that were copied are:
@DIR A:
```

This batch file includes two PAUSE commands so that the user can copy each directory to a separate disk.

STEP 4 Press Alt-F and then type **X** for E**x**it.

STEP 5 Select **Yes** when the Editor prompts for whether you want to save the file.

GUIDED TUTORIAL 10-5

If you look back at a batch file you created six months ago, you are unlikely to remember the details that led you to create it. You will need to read through each line and determine again why you included it. You can add remarks or comments to document a batch program to make it more meaningful to you and others that may use the program. When you look back at an old file with remarks you can read the remarks to know what it does. Follow these steps to revise this batch file:

STEP 1 Place your Student disk in Drive A.

STEP 2 Type **COPY WAITCOPY.BAT COPY2.BAT** and press Enter↵ to have a copy of this batch file to modify.

STEP 3 Type **EDIT COPY2.BAT** and press Enter↵.

This starts the DOS Editor and tells the DOS Editor that you want to edit a text file named COPY2.BAT.

STEP 4 Modify the batch file so it contains the following commands:

```
REM COPY2.BAT
REM
REM This program provides backup files for
REM AUTOEXEC.BAT and CONFIG.SYS by copying
REM them to your Work REM disk and Student disk
REM in drive A
REM!
ECHO OFF
ECHO Insert your Student disk in drive A
PAUSE
REM The AUTOEXEC.BAT file is copied from drive C
REM to drive A
COPY c:\autoexec.bat a:*.bak
ECHO Insert your Student disk in drive A
PAUSE
REM The CONFIG.SYS file is copied from drive C to
REM drive A
COPY c:\config.sys a:*.bak
```

STEP 5 Press Alt-F and then type **X** for E**x**it.

STEP 6 Select **Yes** when the Editor prompts for whether you want to save the file.

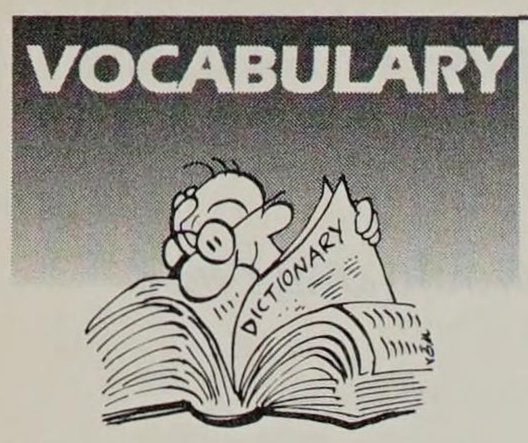
STEP 7 Try the batch file by typing **COPY2** and pressing Enter↵.

ON YOUR OWN EXERCISES

1. Create a batch file called FRMTCHK on a Work disk that formats a disk and checks the disk for bad sectors. Recall that the external CHKDSK command checks the disk for these problems.

2. Create a batch file on your Work disk that copies the .BAT files from the Student disk to a floppy disk in drive A. Instruct the user when to change and insert the disk in drive A. Give the batch file a meaningful name.

3. Add remarks to the batch program you created in Exercise 2 that describes what the program does.

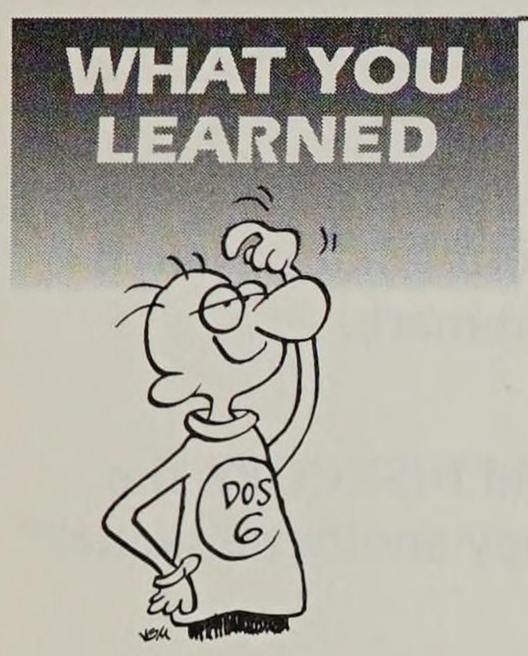


Batch file

An unformatted text file that contains DOS commands which are processed as a batch.

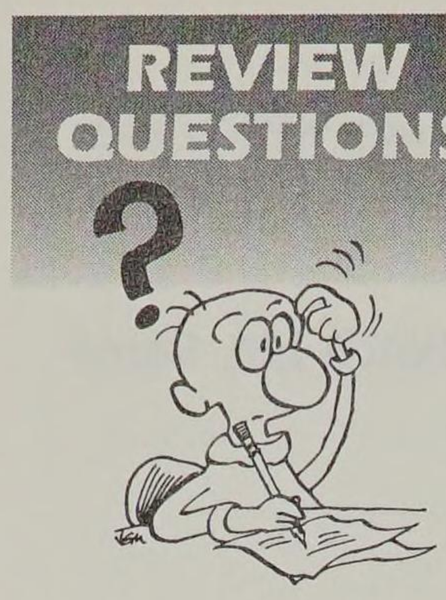
Batch file commands

DOS commands designed to work specifically in a batch file. Some batch file commands are ECHO, PAUSE, and REM.



In this chapter, you learned the following:

- How to create a batch file using the COPY command as well as using the DOS Editor.
- How to execute the commands in a batch file.
- How to use ECHO to hide and display output on the screen.
- How to use PAUSE to add a pause to a batch file.
- How to use REM to add comments to a batch file.



Answer each of the following with *true* or *false*, or fill in the blank with missing information.

1. Batch files let you perform commands you would otherwise include in CONFIG.SYS.

2. To run a batch file, you do not have to type **.BAT** after the filename.

3. When you create a batch file with COPY CON filename, you need to press F6 or Ctrl-Z, and then press Enter↵ to tell DOS you are finished entering commands for the batch file.

4. Putting REM and a space before another command in a batch file causes DOS to treat that command as a remark.

5. When a batch file contains the DOS command DISKCOPY, the batch file handles answering the prompt "Copy another diskette?"

6. ECHO OFF suppresses all output from DOS commands.

7. You must press Spacebar in response to a PAUSE command in a batch file.

8. The text you type after ECHO appears on the screen, even if ECHO is off.

9. The _____ command is recommended for creating simple batch files.

10. Place a check mark next to the filenames that are valid names for a batch file:

FORMAT.COM
MYFILE.BAT
COPYAB.BAT
RESTORE.EXE
BKUP.BAT
BACKUP.EXE
WORK.BATCH

11. To interrupt a batch file temporarily, press _____.

    To cancel a batch file from processing, press _____.

12. Two methods for suppressing the display of commands during batch file execution are:

    _____

    _____

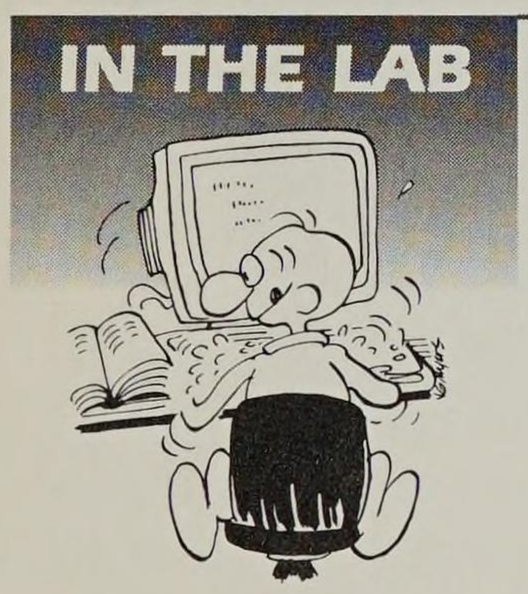
13. The command to restore command display is _____.

14. Enter the commands that will temporarily suspend a batch program in order to display the message "Place a formatted disk in drive A" and then require the user to tell DOS to continue processing.

    _____

    _____

15. The _____ command allows you to enter comments within your batch file.



1. Create a batch file named FFILES.BAT on your Work disk that backs up all the files that start with the letter F. Print the contents of your batch file.

2. Create a batch file on your Work disk with an appropriate name that displays the DOS data and time prompts, then displays a wide directory listing of the root directory of drive C. Print the contents of your batch file.

3. Create a batch file on the Work disk with an appropriate name that displays all the .COM files in the DOS directory of drive C. Print the contents of your batch file.

4. Create a batch file on the Work disk with an appropriate name that pauses for you to insert your Student disk, then displays the directory. Print the contents of your batch file.

THINKING ON YOUR FEET

A friend of yours is having problems with backing up important files. To give your friend a hand, you want to create a batch file named MY_BATCH.BAT that will format the disk in drive B, backup the files listed below to this disk, and print a copy of the directory (by redirecting the output to the printer). You also want this batch file to delete the file CARS.TXT. Create this batch file and test it using your student disk to check that it works.

BUDGET.WK1

PACOLLGE

PENN.TXT

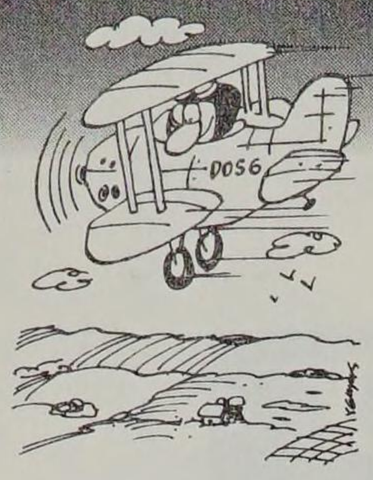
CHAPTER 11

TAILORING DOS TO YOUR NEEDS

After completing this chapter, you will be able to:

- Modify the CONFIG.SYS file.
- Modify the AUTOEXEC.BAT file.
- Install an application.

OVERVIEW



To make your system run more efficiently, you can tailor DOS to change the way it functions and affect the programs you use under the operating system. There are two main files, CONFIG.SYS and AUTOEXEC.BAT, that are read every time you load DOS on your system and that set certain parameters. These files are likely to differ on any two computers that you look at, unless the same person configured both systems, since they are designed to allow a user to customize DOS.

The CONFIG.SYS file tells DOS how to work with the hardware in your system. CONFIG.SYS loads various programs into memory, including ones called device drivers, into memory that set up your system. CONFIG.SYS defines the characteristics for each device connected to your system.

You can create a special batch file, AUTOEXEC.BAT, that DOS runs every time you start your system. It also can contain command statements that set directory and path information. Once the CONFIG.SYS and AUTOEXEC.BAT files are executed, you can still enter DOS commands at the DOS prompt to make other customization changes to the operating system.

MEMORY

Many of the commands used in the CONFIG.SYS file affect how your computer handles its memory. The entire topic of computer memory is very confusing. The topic became confusing because as computer technology advanced, old terms and standards were not replaced, but added on to. Imagine an old farm house, which each generation has made some small addition to, and you can see the kind of confusion that has developed in the subject of computer memory.

There are many highly technical explanations of how different types of computer memory work. However, unless you are a computer programmer, you do not usually need to understand the inner secretes of expanded or conventional memory. Instead, you need enough of an idea to figure out how to use your system efficiently. As you read through the different types of memory, look at Figure 11-1, which shows how the different types of memory are related.

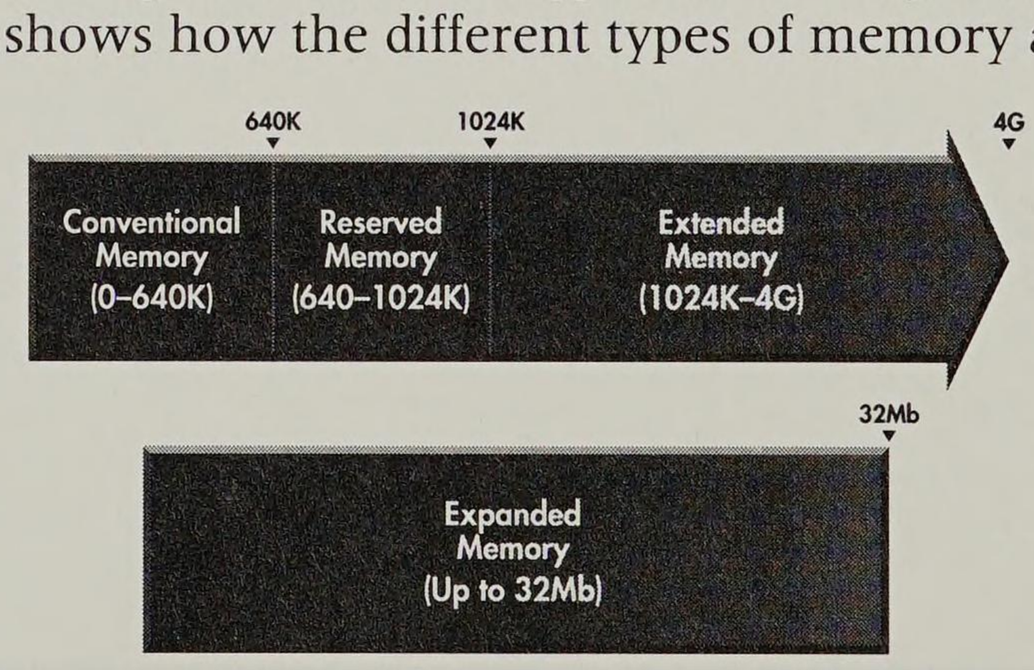


Figure 11-1 Memory comes in several types

Conventional memory is the memory that every computer system has. You can have up to 640K of conventional memory. This memory is always stored on the motherboard, or the board inside your computer that holds the guts of your computer system.

Conventional memory was fine at first, because 640K sounded like more memory than anyone was going to use. Then computers, and computer programs, got better. Next there is reserved memory, which is the 384K of memory that can be added to conventional memory to give you one full megabyte of memory.

Once again, computer use grew, and people started using expanded memory, which is chips or boards that can be added to the computer. Programs were needed to coordinate this memory with conventional memory. Expanded memory takes a little longer to access than conventional or reserved memory because of this.

For power users, expanded memory's slower access became a nuisance. Extended memory developed. This is memory beyond 1 MB, just like expanded. However, extended memory is designed differently, so that it can be accessed by your system as quickly as conventional or reserved memory. Because extended memory was faster and easier for programmers to work with, it has become more common than expanded.

Some programs still require certain types of memory to run. Some programs need expanded memory, rather than extended, because expanded was more available when they were first written. DOS includes a command that lets a part of extended memory act as if it were expanded, so that those programs can still run easily on later systems. High memory is a non-specific term that refers to either reserved or extended memory.

Most of the time you will have no need to concern yourself with the different types of memory on your system, because they will be set up and running for you. You may find at some time that you need to adjust the use of memory on your system because of the limitations of a program you want to use, or to make your system work a little faster.

MODIFYING CONFIG.SYS

When you start your system, your computer performs a series of commands that loads installable device drivers and reserves space in the system memory for information processing. The CONFIG.SYS file contains these commands. You can modify this file to instruct DOS on how you want it to work with the various components of your system.

You can change the CONFIG.SYS file using the DOS Editor, Edlin, or a word processing package that can create ASCII text files.

Table 11-1 contains a list of the commands that are available for use in this file.

COMMAND	PURPOSE	COMMAND EXAMPLE
BREAK	Sets when DOS checks for Ctrl-C.	BREAK=ON
BUFFERS	Sets the number of buffers DOS uses to store data.	BUFFERS=20
COUNTRY	Sets the country conventions.	COUNTRY=003,, C:\DOS\RAM DRIVE.SYS
DEVICE	Loads a device driver.	DEVICE=ANSI.SYS
DEVICEHIGH	Loads a device driver in high memory.	DEVICEHIGH= C:\DOS\RAM DRIVE.SYS
DOS	Selects where DOS is loaded and use of reserved memory.	DOS=HIGH,UMB
DRIVPARM	Sets the parameters of a disk drive.	DRIVPARM= /D:4 /F:5 /N /S:32
FCBS	Sets the number of file control blocks (FCBs) that can be open.	FCBS=5
FILES	Sets the number of files that can be open at once.	FILES=30
INSTALL	Installs and executes a program.	INSTALL= C:\DOS\NLSFUNC.EX
LASTDRIVE	Sets the highest logical drive letter.	LASTDRIVE=G
NUMLOCK	Sets whether NumLock for the numeric keypad is on or off.	NUMLOCK=OFF
REM	Adds a comment.	REM Set # of files to open
SET	Sets the value of an environmental variable.	SET PROMPT=PG
SHELL	Sets how DOS works with a command processor.	SHELL=COMMAND.COM /P /E:1024
STACKS	Sets RAM used for processing hardware interrupts.	STACKS=32,128
SWITCHES	Sets options used during CONFIG.SYS execution.	

Table 11-1 Commands for the CONFIG.SYS file

USING BREAK

If you want to stop a DOS command from continuing, you would press Ctrl-C. During normal operation, DOS checks to see if Ctrl-C has been pressed only when it reads from the keyboard or writes to the screen or printer. However, if DOS is currently processing and you press Ctrl-C,DOS will ignore the command. For example, if you just instructed DOS to save a file and then press Ctrl-C to initiate a stop command, DOS will not execute the instruction until the next time it displays information on your screen. You must note that the process will run to completion and any old copy of the file that you may have wanted to save will be written over, and you would not be able to stop it with Ctrl-C. To have DOS increase the number of times it checks for this key combination, include a BREAK statement in the CONFIG.SYS file by typing **BREAK=ON.** You can also enter this command at the DOS prompt by typing **BREAK ON**.

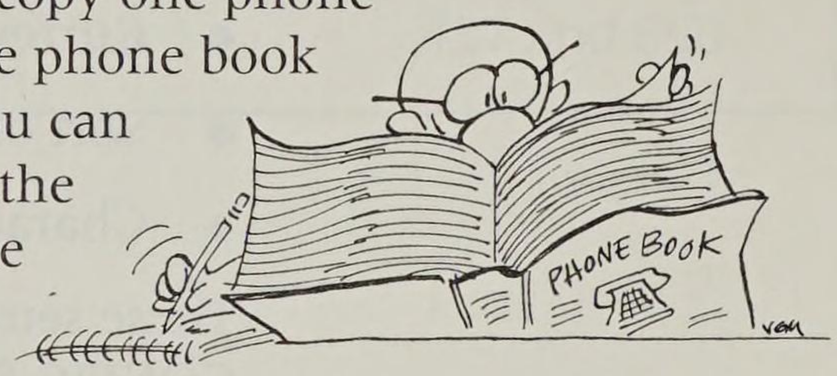
To return the Ctrl-C checking to the default setting, type **BREAK OFF**. To check the current break setting, type **BREAK.** DOS will display BREAK is on or BREAK is off to indicate the current BREAK setting.

USING BUFFERS

When you start your computer, DOS reserves an area in your main memory for temporarily holding file data as you read and write to the files. The more data that is read into memory, the faster DOS can access the information, thereby making programs run faster.

This storage is divided into units called buffers that are equivalent to .5K, or about the same size as a sector on a disk. By increasing the number of buffers available, the number of storage areas increases for storing file information. In this way, you decrease the number of times DOS has to read and write information when accessing file data.

A good analogy to reading from a buffer is needing 20 phone numbers from the same page. You can copy one phone number to a sheet of paper, put the phone book away, and call the first number. You can repeat this process 19 times for all the phone numbers, or you can use the more efficient approach of jotting down all 20 numbers when you first open the phone book. This second approach is a lot like using a buffer to keep the extra information until you need it.



The more buffers you use though, the less memory space is available for other uses. Therefore, when entering a BUFFER statement in the CONFIG.SYS file, consider a reasonable buffer size. To achieve the

best performance, set the number of buffers to match the size of your hard disk. Table 11-2 lists reasonable buffer sizes for hard disks. For example, if your system contains a 40MB drive, you would set the buffers to 30 by typing **BUFFERS=30.** After the value of 50 buffers, performance does not increase, and you only use more memory.

HARD DISK SIZE	RECOMMENDED BUFFER SIZE
Less than 40MB	20
40MB - 79MB	30
80MB - 119MB	40
More than 120MB	50

Table 11-2
Buffer sizes

If your CONFIG.SYS file does not contain a BUFFERS command, DOS will reserve space for the number of default buffers, which depends on the size of your disk drive and conventional memory.

As an example, suppose that you have a database program, and you are frequently retrieving records. With buffers, DOS will write the most recent records to its electronic memory (RAM), which it can access almost instantly. Without this transferring of data to the buffer area in memory, the computer would have to physically search over the surface of the hard disk for the data. This is a mechanical process, which, in comparison to searching electronic memory, takes a longer time and can slow down the system.

USING COUNTRY

DOS defaults to the United States national language for the following settings:

- Date and time display
- Currency symbol
- Sort order for alphabetizing files
- Characters used in file and directory names

These settings can be changed using the COUNTRY command in the CONFIG.SYS file. To change the characters and arrangement of your keyboard to fit the keyboard of another country, you would include the keyboard (KEYB) setting in this command. To change the character set so that you can type, display, and print characters from another language, include the code page setting in this command. Code pages tells DOS whether characters with high ASCII values represent letters used in foreign languages or other special symbols.

COUNTRY COMMAND SYNTAX

The syntax for the COUNTRY command is:

xxx specifies the country code you want to use.

[drive:][path][filename] specifies the location and name of the file containing the country information. The normal path is C:\DOS\COUNTRY.SYS.

```
COUNTRY=xxx[,[yyy],[drive:][path][filename]]
```

yyy specifies the code page for the country.

For example, to change your settings to the Spanish setting:

1. Type **COUNTRY=034,437,C:\DOS\COUNTRY.SYS**.

Table 11-3 lists a few country codes to illustrate the information used with the COUNTRY command.

Table 11-3 Country codes

COUNTRY	COUNTRY CODE	KEYBOARD CODE	VALID CODE PAGES
Canadian-French	002	cf	863 and 850
Germany	049	gr	437 and 850
Spain	034	sp	437 and 850
United Kingdom	044	uk	437 and 850

USING DEVICE

DOS is compatible with different types of hardware. It can do this since it includes device drivers for the keyboard, monitor, hard and floppy disk drives, and ports like LPT1. Other installable device drivers provided with DOS or with other hardware devices can be loaded using the DEVICE command.

DEVICE COMMAND SYNTAX

The syntax for the DEVICE command is:

[drive:][path]filename specifies the location and name of the device you want to load.

dd-parameters specifies any command-line information required by the device driver.

```
DEVICE=[drive:][path]filename [dd-parameters]
```

For example, you can add the device driver MOUSE.SYS stored in the DOS directory, which will enable you to use a mouse whenever DOS is loaded. To do so, enter the following command in your CONFIG.SYS file:

DEVICE=C:\DOS\MOUSE.SYS

All CONFIG.SYS files will contain at least one DEVICE command which loads a device driver called ANSI.SYS. ANSI.SYS controls how the screen displays information, or reacts to the keyboard.

USING SMARTDRIVE

Another way you can improve computer speed if your system contains a hard drive and extended or expanded memory is to use the SMARTDrive disk caching program. It stores disk data in memory, which improves input/output time by eliminating the task of reading the actual files. You can only use this command if your system contains 512K of extended or 256K of expanded memory for where SMARTDrive puts the information in a disk cache, which is the space is memory where the information from the disk is stored.

For example, to create a disk cache of 1MB, assuming the device driver for SMARTDrive, the file SMARTDRV.SYS, is in the DOS directory, you would type:

DEVICE=C:\DOS\SMARTDRV.SYS 1024

If a value is not entered, DOS uses the default of 256K. If you enter a value that is too large, DOS creates a disk cache as large as possible for your system (up to 2MB).

USING HIMEM.SYS

When you boot your system, DOS is normally loaded into conventional memory. This is the RAM that all computers are equipped with. Conventional memory can be up to 640K and is stored on the motherboard. If your system has more than 1 MB, it also has extended memory. It can be used for running DOS and other appli-

cations designed to use extended memory. The HIMEM.SYS file manages the use of extended memory. To make it available for DOS, assuming HIMEM.SYS is in the DOS directory, you can add the following command to the CONFIG.SYS file by typing:

DEVICE=C:\DOS\HIMEM.SYS

You may want to make extended memory available to DOS so that DOS takes less of conventional memory. This frees conventional memory for any programs which must be in conventional memory to work.

USING EMM386.EXE

You can allocate part of your extended memory as expanded memory if you are running programs that can use only expanded memory.

The EMM386.EXE (expanded-memory emulator) file can be used if you have a machine that has an 80386 or 80486 central processing unit. To have the system simulate a portion of your extended memory as expanded memory, add the following two lines to your CONFIG.SYS file:

DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE 2048

The first command loads DOS into high memory and the second command loads the extended memory manager and tells DOS how to use the extended memory. The second part of this command allocates 2048K, or 2MB, of extended memory to be used as expanded memory. If a value is not entered, DOS uses the default of 1MB.

USING DEVICEHIGH

When a device driver is loaded using the DEVICE command, the driver is loaded into conventional memory. You can also load device drivers into reserved memory using the DEVICEHIGH command in your CONFIG.SYS file in order to free up conventional memory for other programs.

Reserved memory is located on the motherboard and is usually 384K. DOS uses it primarily for loading device drivers. Not all machines are equipped with reserved memory, because it is available only on AT class and newer machines, those with memory beyond 640K.

For example, to load device driver RAMDRIVE.SYS into reserved memory, type **DEVICEHIGH=C:\DOS\RAMDRIVE.SYS /E**. If there is not enough reserved memory to fit DOS, DOS uses conventional memory.

USING DOS

As we mentioned, DOS is loaded into conventional memory by default. You can have your computer run more efficiently by forcing it to load as much of DOS into extended memory as possible. The DOS command establishes a link to the upper memory area or loads part of itself into the high memory area (HMA).

To load DOS into extended memory when the system is booted, add the following two statements to the CONFIG.SYS file by typing:

DEVICE=HIMEM.SYS
DOS=HIGH

You can also use the extra space in reserved memory by adding another DOS statement to the CONFIG.SYS file if you have a 386 or 486 computer system. To make reserved memory available for some device drivers and other applications, use DEVICE commands to install HIMEM.SYS and EMM386.EXE. Then include the following command by typing:

DOS=UMB

The UMB stands for the upper memory block, which is the name for the unused space in reserved memory. To load DOS into extended memory and make unused space in reserved memory available, type the following command:

DOS=UMB,HIGH

USING FILES

Before you can use a file, you must open it. DOS supports up to eight open files at one time by default by storing information about the open files in a table in memory. Eight files may seem like more files than you use at any one time, but there are additional files used to accomplish many of your tasks. If your software application uses more open files than the default number, either your screen will display some type of error message or your system will lock up.

To make sure DOS can open the number of files required to run your software application, add a FILES statement to the CONFIG.SYS file. The FILES statement determines how many files can be open at once by defining how many slots there are to store the information about the files. One way to view this is to imagine that the FILES statement creates a parking lot. You cannot have more open files than there are spaces in the parking lot, because there is just no room for them.

To determine an appropriate number of slots, refer to your software manual. Most applications, during installation, will tell you if you

need to increase the number after FILES to create more slots. A good starting point for most applications is 20 files; however, you can enter a number as high as 255. For example, to reserve space for 30 files, type FILES=30. Do not make the number too high, because DOS maintains a space in memory for each file, whether or not you ever open that many files. Having too high a number is like having too large a parking lot, because it takes up extra space in memory that you need to run programs.

USING FASTOPEN.EXE WITH INSTALL

The INSTALL command loads a terminate-and-stay-resident (TSR) program when the CONFIG.SYS file is processed. You can use this command to execute the FASTOPEN.EXE program. It speeds up file access time by opening frequently used files and tracking their location in memory rather than from the directory on the disk.

FASTOPEN can be included in the CONFIG.SYS file, run as a batch program in the AUTOEXEC.BAT file, or entered directly at the command prompt.

FASTOPEN COMMAND SYNTAX

The syntax for the FASTOPEN command used in the CONFIG.SYS file is:

drive:path specifies the location of the program (FASTOPEN.EXE in this example) you want to run using the INSTALL command.

n specifies the number of files you want to keep track of. These can range from 10 to 999, with 48 as the default.

```
INSTALL=[[drive:]path]FASTOPEN.EXE drive:[[=]n] [drive:[[=]n][...]][/x]
```

drive after FASTOPEN.EXE specifies the hard disk drives for which you want FASTOPEN to track the opening of files.

/x stores the cache this command creates in expanded memory. You must also include a DEVICE command to run the program that manages the expanded memory; otherwise, FASTOPEN will use conventional memory.

To track the location of 50 files on drive C type

INSTALL=C:\DOS\FASTOPEN.EXE C:=50

The INSTALL command is also used with the KEYB.COM, NLSFUNC.EXE, and the SHARE.EXE commands.

USING REM

The REM command you used earlier to add remarks to a batch file can also be used when customizing your CONFIG.SYS file. For example, you can add remarks that describe what certain commands will do. You might use REM to document the following CONFIG.SYS file:

```
buffers=20
files=30

rem The following commands make extended memory
rem available for use, install a mouse driver from the DOS
rem directory, and load DOS into extended memory.

device=himem.sys
device=c:\dos\mouse.sys
dos=high
```

All text following a REM statement is ignored when the CONFIG.SYS file is processed.

USING SHELL

When you boot your system, DOS automatically loads the COMMAND.COM command processor. A command processor is basically the program that translates the commands you type in into language that your computer hardware actually understands. You can customize the CONFIG.SYS file to have DOS load a different command processor.

To change the command processor to the file NEW_PROC.COM, enter the following statement to your CONFIG.SYS file:

```
SHELL=C:\NEW_PROC.COM
```

If the file NEW_PROC.COM uses any switches, you can also include them in the statement. You will only want to use a different command processor when you are told to, which is likely to be never, or when you have become the type of computer whiz who can create them.

A more common use for the SHELL command is to use it with COMMAND.COM to increase the size available for environment variables.

For example, to increase the size of memory for environment variables to 512K, you would type:

SHELL=COMMAND.COM /E:512 /P

This statement will load COMMAND.COM as the command processor. The /e switch used with the value 512 increases the environment size to 512 bytes. By including the /p switch, the new processor becomes permanent. You cannot return to the prior version of the command processor by typing **EXIT**.

GUIDED TUTORIAL 11-1

You work with many different computers each day. You want to create a CONFIG.SYS file on a systems disk so that you can start all computers with specific settings, using that disk.

STEP 1 Place a Work disk in drive A.

STEP 2 Type **SYS A**: and press Enter↵.

STEP 3 Type **EDIT A:CONFIG.SYS** and press Enter↵.

STEP 4 Type the following lines for the CONFIG.SYS file.

FILES=40
BUFFERS=30
DEVICE=C:\DOS\ANSI.SYS

This CONFIG.SYS file sets the file table to track as many as 40 open files at once and sets up 30 buffers to improve disk access. ANSI.SYS as mentioned earlier, is required to control the screen display and the keyboard.

STEP 5 Press Alt-F for the File menu and select **Exit.**

STEP 6 Select **Yes** when DOS prompts if you want to save the loaded file.

STEP 7 Press Ctrl-Alt-Del to restart your system using the CONFIG.SYS file in the disk in drive A.

Your system now uses the configuration created by the CONFIG.SYS file of your Work disk. You will see the prompt for the date and time.

STEP 8 Take the disk out of drive A and press Ctrl-Alt-Del to restart your system using the CONFIG.SYS file in the hard disk.

GUIDED TUTORIAL 11-2

After creating the CONFIG.SYS file, you realize that you need to add a few more of the commands to set other settings for the computers that you will use.

STEP 1 Put the disk created in the last practice exercise in drive A.

STEP 2 Type **EDIT A:CONFIG.SYS** and press Enter↵ to modify the file.

STEP 3 Add the following two lines to the file.

```
DEVICE=C:\DOS\HIMEM.SYS
DOS=HIGH
```

The lines you have added to the CONFIG.SYS file makes additional high memory available if your computer has it and puts part of DOS there. After you boot your computer with this CONFIG.SYS file, you will have more conventional memory.

STEP 4 Press Alt-F for the File menu and select **Exit.**

STEP 5 Select **Yes** when DOS prompts if you want to save the loaded file.

STEP 6 Press Ctrl-Alt-Del to restart your system using the CONFIG.SYS file in the disk in drive A.

STEP 7 Take the disk out of drive A and press Ctrl-Alt-Del to restart your system using the CONFIG.SYS file in the hard disk.

ON YOUR OWN EXERCISES

1. Create a CONFIG.SYS file on a bootable Work disk in drive A that:
   - Increases the number of times DOS checks for Ctrl-C.
   - Creates a buffer size of 20.
   - Creates a file size of 30.

   Perform a warm boot with the Work disk in drive A to see if the configuration has changed.

2. To the CONFIG.SYS file created in Exercise 1, add a statement that changes the national language to the Canadian-French setting. Perform a warm boot.

3. Create a CONFIG.SYS file on a bootable Work disk that:

   - Creates a buffer size of 30.
   - Creates a file size of 40.
   - Loads the MOUSE.SYS device driver.

   Perform a warm boot.

4. Modify the CONFIG.SYS file created in the previous exercise to use SMARTDRV and FASTOPEN. Use the default settings of SMARTDRV. Use FASTOPEN to keep track of fifty of the files on drive C.

5. Modify the CONFIG.SYS file you used in the previous exercise. Add remarks after each of the commands in the file to describe the function the other commands perform.

MODIFYING AUTOEXEC.BAT

The AUTOEXEC.BAT file is a special batch file that is executed every time DOS is loaded on your system. You can modify this file to contain any DOS commands that you wish instead of entering them at the DOS prompt every time you begin a session on the computer.

USING TIME AND DATE

If you have an older system that does not have an internal clock that automatically remembers the time and date, DOS prompts you to enter the current time and date when AUTOEXEC.BAT is executed. It is important to enter the correct time and date in order to have commands such as XCOPY, BACKUP, and RESTORE work correctly with your files.

To enter the two commands, type:

TIME
DATE

When the AUTOEXEC.BAT file is executed, your screen will display:

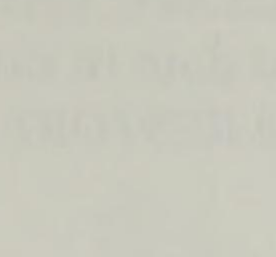
```
Current time is 4:23:49:80p
Enter new time:
```

After entering the time, the screen will display:

```
Current date is Tue 01-01-1980
Enter new date (mm-dd-yy):
```

USING PATH

By default, you have to move to a directory containing a program file before starting the program. You can also run a program from any directory by specifying the full path at the command line, such as C:\WP60\WP. A third option is to add a PATH statement to the AUTOEXEC.BAT file. In a PATH statement, you tell DOS which other directories to search after it searches the current directory for the program file you request.



PATH COMMAND SYNTAX

drive:path provides the location that DOS will search for each drive and directory in the statement. Each drive and directory is separated by a semi-colon (;) and is searched in the order listed.

PATH [[drive:]path;...]]

For example, if you frequently use WordPerfect and Quattro Pro, you can include the paths for each program file by entering:

PATH C:\;C:\DOS;C:\WP60;C:\QPRO

After the system is loaded, you can load WordPerfect from the command prompt by typing WP, which is the command to start WordPerfect. DOS will not find the command in the root directory; therefore, it continues to search the other directories in the PATH statement beginning with C:\DOS. When it searches C:\WP60, the directory containing the WordPerfect program files, it will locate and open the WordPerfect program.

USING PROMPT

If you do not change the appearance of the command prompt, DOS displays the current drive followed by a greater-than sign, which is

used as a separator, as its default. For example, if your current drive is C, DOS displays C>.

DOS provides a number of ways to change the appearance of the command prompt. Table 11-4 contains a list of parameters.

PARAMETER	DISPLAYS
$q	=
$$	$
$t	Current time
$d	Current date
$p	Current drive and path
$v	DOS version
$n	Current drive
$g	>
$l	<
$b	|
$_	Advances the cursor to the beginning of the next line.
$e	ASCII code 1B (Escape) to be used with ANSI.SYS.
$h	Backspace; to remove characters that have been written to the prompt command line.

Table 11-4 Parameters for the command prompt

If you work with many directories and subdirectories, you may always want the DOS prompt to display the current drive and directory. Add the following PROMPT statement to your AUTOEXEC.BAT file by typing:

PROMPT $P

If WP60 is the current directory on drive C, the screen would display:

```
C:\WP60
```

To display the greater-than symbol to separate the directory path from any commands you may enter, type:

PROMPT PG

The screen will display:

```
C:\WP60>
```

DISPLAY A MENU

In Chapter 10, you learned how to create and edit batch files. You can create a batch file that displays a menu. You can display a menu using the ECHO command, where ECHO OFF represents a blank line, and ECHO ON displays your line of text. You can also display the menu using the TYPE command, which gives you the advantage of creating the text file with your word processor. A simple batch file for a menu (called MENU.BAT) may look like:

```
ECHO OFF
CLS
ECHO.
ECHO.
ECHO   MAIN MENU
ECHO.
ECHO   1) WORDPERFECT 5.1
ECHO.
ECHO   2) QUATTRO PRO
ECHO.
ECHO   3) GENERAL LEDGER
ECHO.
ECHO   4) INVENTORY
ECHO.
ECHO   5) RETURN TO DOS
ECHO.
ECHO   Enter the number of your selection and press ENTER.
```

Each choice in your menu must have a batch file that contains the necessary DOS instructions for each item on the menu. Your AUTOEXEC.BAT file may look like:

```
ECHO OFF
PATH C:;C:\DOS;C:\WP60;C:\QPRO;C:\GL;C:\INVTY
PROMPT $P$G
MENU
```

When AUTOEXEC.BAT is executed, it will run the batch file MENU.BAT, which displays the following menu:

```
                    MAIN MENU

                1) WORDPERFECT 5.1

                2) QUATTRO PRO

                3) GENERAL LEDGER

                4) INVENTORY

                5) RETURN TO DOS


Enter the number of your selection and press ENTER.
```

The batch file 1.BAT, which runs selection number 1, may look like:

```
PATH C:\WP60;C:\;C:\DOS;C:\BAT
CD \WP60
WP
PATH C:\;C:\DOS;C:\BAT
MENU
```

This file sets the directory path for WordPerfect and then changes the current directory to the WP60 directory. The WP command loads the WordPerfect program. Since the name of the batch file that displays the main menu, MENU, is entered last, you return to it when you exit WordPerfect.

GUIDED TUTORIAL 11-3

In the last Guided Tutorial, you created a Systems disk with a CONFIG.SYS file on it so that you could start a number of different computers using the same settings. You now want to create an AUTOEXEC.BAT file for that disk so that you can control some other settings.

STEP 1 Put the disk you used in the last Guided Tutorial practice in drive A.

STEP 2 Type **EDIT A:AUTOEXEC.BAT** and press Enter↵.

STEP 3 Type the following lines for the AUTOEXEC.BAT file.

```
ECHO OFF
PATH=C:\;C:\DOS;C:\WP60;C:\QPRO
PROMPT $P$G
DOSSHELL
```

In this AUTOEXEC.BAT file, ECHO OFF stops echoing commands that are processed to the screen by the AUTOEXEC.BAT file. The PATH statement includes the root, DOS, WP60, and QPRO directories in the search when DOS cannot find the program you want executed in the current directory. The prompt will display the current drive and directory followed by a greater-than sign, for instance, C:\DOS>. The DOSSHELL command loads the DOS Shell.

STEP 4 Press Alt-F for the File menu and select **Exit.**

STEP 5 Select **Yes** when DOS prompts if you want to save the loaded file.

STEP 6 Press Ctrl-Alt-Del to restart your system using the CONFIG.SYS and AUTOEXEC.BAT files in the disk in drive A.

Your system uses the configuration created by the CONFIG.SYS file of your Work disk, then runs the AUTOEXEC.BAT file.

STEP 7 Take the disk out of drive A and press Ctrl-Alt-Del to restart your system using the CONFIG.SYS file in the hard disk.

GUIDED TUTORIAL 11-4

After creating the AUTOEXEC.BAT file in the last practice, you find that you want to modify it.

STEP 1 Put the disk you used in the last practice in drive A.

STEP 2 Type **EDIT A:AUTOEXEC.BAT** and press Enter↵ to modify the file.

STEP 3 Modify the file so it now looks like this:

```
ECHO OFF
PATH=C:;C:\DOS;C:\WP60;C:\QPRO
PROMPT $P$G
MODE LPT1=COM1
```

This AUTOEXEC.BAT file will perform the same steps as in the previous tutorial, but it also uses the MODE command to redirect the output from LPT1 to COM1, which is a different port on your computer.

ON YOUR OWN EXERCISES

1. Create an AUTOEXEC.BAT file on a bootable Work disk in drive A that:

   - Turns off the echo display.
   - Prompts you to enter the current date and time.
   - Searches the 123 directory so you can start the program called 1-2-3 from any directory.

   Perform a warm boot with the Work disk in drive A to verify that the new AUTOEXEC.BAT file is working.

2. Create an AUTOEXEC.BAT file on a bootable Work disk that:

   - Turns off the echo display.
   - Searches for the WP60 and GAMES directories for executable programs that are not in the current directory.

   Perform a warm boot to check your work.

3. Create an AUTOEXEC.BAT file on a bootable Work disk that:

   - Prompts for the date and time.

- Searches for the 123, dBASE, WP60, and GRAPHICS directories for executable programs that are not in the current directory.

Perform a warm boot to check your work.

4. Create a batch file named MENUPROG.BAT that displays the following menu:

```
Program Menu
Type the number of the program to run and press ENTER.
1) Lotus 1-2-3
2) Paradox
3) WordPerfect 5.1
4) Harvard Graphics
```

Run the batch file to check that it appears correctly.

5. Modify the AUTOEXEC.BAT file from the third exercise to show the menu you have created in the fourth exercise.

INSTALLING APPLICATIONS

Most programs must be installed before you can use them. Installing an application means copying its files to a hard disk and setting it up so you are ready to use it. Once the application is installed, you can run it from the DOS command prompt or from the DOS Shell.

In DOS Shell, you can add programs that you use frequently to the Main program group or setup another group of your own. You might want to add an accounting program that you use daily to the Main group or you might want to create a group called PLAYGAME to hold all of your game programs. The Main group will have an entry for the PLAYGAME group so you can easily access these programs.

This section of the chapter will provide examples but no exercises for you to try since each person will have a different set of program software accessible for their use. You can follow the steps presented in this section to make your own exercises with the software that you have available. For all of these examples it is important to have the program list area in the bottom left of the screen active.

ADDING A PROGRAM TO THE MAIN GROUP

You use the same basic procedure when you are ready to add either a program group or a group item. To begin, choose **New** from the File menu. The New Program Object dialog box displays on your screen. Select **Program Item** and the **OK** button to display the Program Item dialog box. The fields in this box allow you to enter a name for the program, commands that will start the program, and a startup directory that DOS will use when starting the program. Each field in this dialog box is described in Table 11-5.

FIELD	PURPOSE
Program Title	A title-bar entry of up to 74 characters.
Commands	The DOS-prompt entry for starting the program.
Startup Directory	The directory that must be active to start the program.
Application Shortcut Key	A combination used with Alt, Ctrl, or Shift to start the program quickly.
Pause after exit	Waits until you press a key to return to the Shell after exiting.
Password	An optional entry from 1 to 256 characters that you must supply before starting the application.

Table 11-5
Program Fields

You can select the **Advanced** command button at the bottom of the Add Program dialog box to display another dialog box of advanced options. Advanced options include adding help text that will display when you highlight the menu option and press **1**, setting the display mode to text and/or graphics. Table 11-6 provides a list of all the fields in the Advanced dialog box. You can finalize your entries in the dialog boxes by selecting **OK**. Once you add the program, you can run the program by highlighting and pressing Enter↵. If the program has a password, you must supply the correct password before the program starts.

FIELD	PURPOSE
Help Text	Up to 256 characters that will display when you highlight the program and press 1.
Conventional Memory	Amount of memory needed to start the program.
XMS Memory KB Required	Amount of extended memory required.
XMS Memory KB Limit	Amount of extended memory made available to the program.
Video Mode	Text or Graphics display.
Reserve Shortcut Keys	Allows key combination to be reserved for use by your program rather than the DOS Switcher, which lets you move between applications.
Prevent Program Switch	Prevents a program from switching to the Shell or another program.

Table 11-6 Advanced program fields

ADDING A GROUP UNDER A GROUP

You can add a new program group under the Main group or any other group. With the program list section of the DOS Shell screen active, choose **New** from the File menu. Because you want to add a group you must select Program Group before you choose the **OK** button. Your entries are a little different this time since you must supply a name for the group and you can also type help information or a password that the user must supply to access the group. Table 11-7 provides a list of all the fields in the dialog box. You can finalize your entries in the dialog boxes by selecting **OK**.

FIELD	PURPOSE
Name	An entry of up to 74 characters for the group title bar.
Help Text	An entry of up to 256 characters that will display when the group is highlighted and F1 is pressed.
Password	An entry of up to 256 characters that will need to be supplied to access the group.

Table 11-7 Program group fields

RUNNING AN INSTALLED APPLICATION

Besides running a program through the DOS Shell, once a program is installed, you can run the program directly from the DOS prompt. To run a program, you must tell DOS the file to run and where the program is located. You can tell DOS the location by using the CD command to switch to the directory. When the program's directory is in the PATH command, you usually can start the program from any directory.

To start a program:

1. Type the name of the program and press Enter↵.

If you are unsure of the program's name, use the DIR command to list the files in the current directory with a .BAT, .COM, or .EXE extension. Once the program starts, you must follow that program's rules for how to use the program and for how to leave it.

GUIDED TUTORIAL 11-5

You might want to add the Quicken program under the Main Program Group if you use Quicken to record all of your expenditures. With the Main Program Group's program list displayed in the bottom part of your screen you would follow these steps to add Quicken if the program was stored in the subdirectory QUICKEN 6. If you do not have Quicken, follow these steps anyway, but do not actually try starting the program.

STEP 1 Choose **New** from the File menu, then select **Program Item** and the **OK** button.

STEP 2 Type **QUICKEN 6** in the Program Title field, then press Tab⇆.

STEP 3 Type **Q** as the command that starts Quicken and press Tab⇆.

STEP 4 Type **C:\QUICKEN6** and press Enter↵ close the dialog box to choose the **OK** button.

GUIDED TUTORIAL 11-6

To add a GAMES group under the MAIN group, provide a help message of Goof-off activities, and a password of NOWORK, follow these steps with the Main group displayed in the program list:

STEP 1 Choose **New** from the File menu, then select **Program Group** and the **OK** button.

STEP 2 Type the title **GAMES**, then press Tab.

STEP 3 Type **Goof-off activities** for the help message and press Tab.

STEP 4 Type **NOWORK** for the password and press Enter to choose the **OK** button.

STEP 5 Press ↓ to move to GAMES and press Enter.

Now you can see the contents of the GAMES group. It is empty right now except for Main so you can return to the Main program group. You would need to add program items to this new group for each game that you want in it.

GUIDED TUTORIAL 11-7

Once you have installed an application like Quicken, you can run the application by following these steps:

STEP 1 Press ↓ or ↑ until QUICKEN 6 is highlighted.

STEP 2 Press Enter to select this program item and start Quicken 6.

STEP 3 Type **X** as the command that exits Quicken.

GUIDED TUTORIAL 11-8

Besides running Quicken from the DOS Shell, you can run the application from the DOS prompt by following these steps:

STEP 1 Type **CD\QUICKEN6** and press Enter↵.

If C:\QUICKEN6 is in the PATH command of your AUTOEXEC.BAT file, you do not need to do this.

STEP 2 Type **Q** and press Enter↵ to start Quicken 6.

STEP 3 Type **X** as the command that exits Quicken.

ON YOUR OWN EXERCISES

1. Add a group to the Main program group in DOS Shell called More Games. Have this group display text of "Contains games written in BASIC that are supplied with DOS" when the user presses F1.

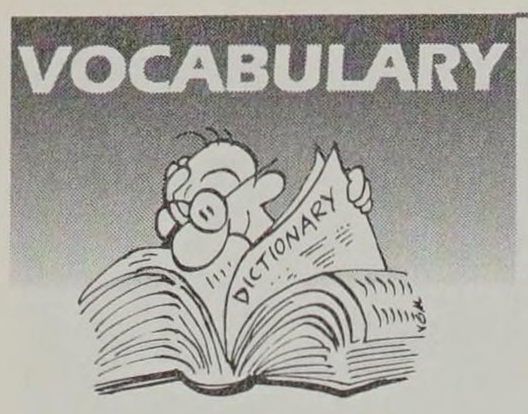
2. Add to the More Games group a program item called Nibbles. The DOS command to run this basic program is QBASIC /RUN C:\DOS\NIBBLES.

3. Add to the More Games group a program item called Gorilla. The DOS command to run this basic program is QBASIC /RUN C:\DOS\GORILLA. Add a password to this program of Ape.

4. Run the Nibbles and Gorilla programs to make sure they work.

5. Run the Nibbles and Gorilla programs from the DOS prompt. When you finish with the game and return to a screen that looks like the DOS Editor, display the File menu and choose Exit.

6. In the DOS Shell, delete the program items and program group you have just created.



Buffers

Areas in your main memory for temporarily holding file data as you read and write to the files. Buffers allow DOS to access information more quickly. This storage is divided into units of .5K, or about the same size as a sector on a disk.

Conventional memory

The RAM that all machines are equipped with. It can be up to 640K and is stored on the motherboard.

Device drivers

A program that controls how a device is used on your computer system. An installable device driver must be transferred from disk to memory.

Disk cache

A space in memory that contains information that is stored on a disk. Since the information is stored in memory, it is faster to access than if it were still on disk. The information is read to the disk when the files are closed.

Expanded memory

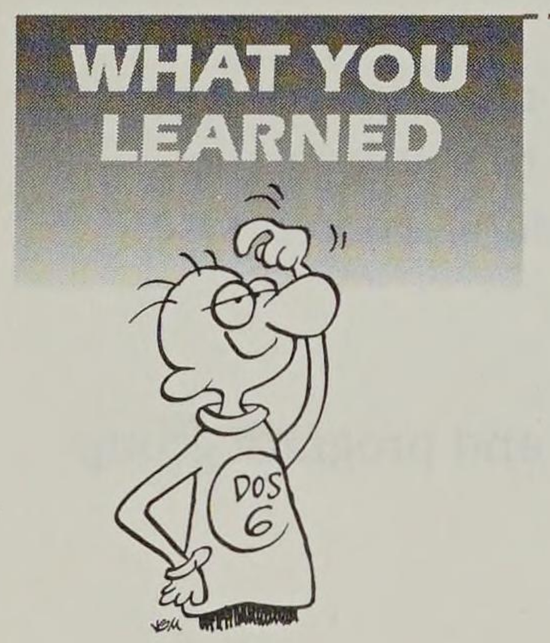
Additional memory stored on a separate card in the computer. It can be used by all DOS-based machines. You can run programs and applications that are designed to use expanded memory.

Extended memory

Memory that is part of RAM that extends beyond 1MB. It can be used for DOS and applications that are designed for it.

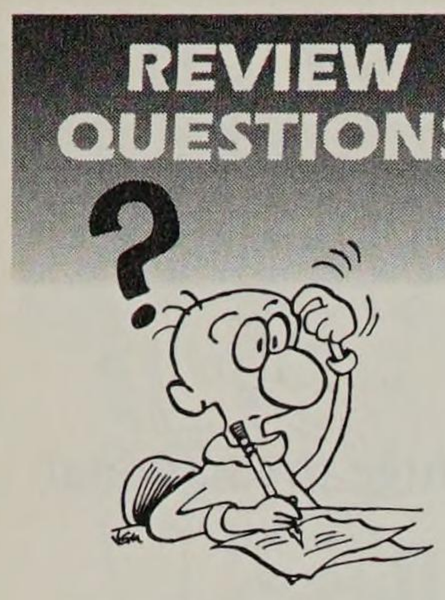
Reserved memory

A type of memory that is available on AT class and newer machines. It is usually 384K and is stored on the motherboard. This area is usually used for storing device drivers but DOS 5 and 6 lets you load other information in this memory through the DEVICEHIGH command.



In this chapter, you learned the following:

- Adding commands to CONFIG.SYS to change how your computer performs.
- Adding commands to AUTOEXEC.BAT to have DOS perform a set of commands every time you start your computer.
- Adding a program to DOS Shell.



PART I

Answer each of the following with *true* or *false*.

_____ **1.** CONFIG.SYS contains many commands that you do not use at the DOS prompt.

_____ **2.** When you have BREAK=OFF in CONFIG.SYS or you enter BREAK OFF from the command prompt, DOS ignores when you press Ctrl-C.

_____ **3.** Device drivers load software that your system's hardware needs loaded to operate correctly.

_____ **4.** You can use HIMEM.SYS to make your computer's extended memory available to DOS and other applications designed to use extended memory.

_____ **5.** The directories in the PATH command tells DOS where to find programs to run when they are not in the current directory.

_____ **6.** If you put PROMPT $v $p $g in your AUTOEXEC.BAT file, the prompt will appear as MS-DOS 6.00 >.

_____ **7.** You must always include TIME and DATE in your AUTOEXEC.BAT file so your computer always has the correct time and date, even if your computer has a clock card.

_____ **8.** If you put the name of a batch file in the AUTOEXEC.BAT file, DOS will run that batch file when you start your computer.

_____ **9.** You can run all software without installing.

PART II

Answer each of the following questions, or fill in the blank.

1. What is the purpose of the CONFIG.SYS file?

2. What is the purpose of the AUTOEXEC.BAT file?

3. The _____ command checks more frequently for the Ctrl-C key combination.

4. The _____ command reserves storage areas equivalent to .5K each in the main memory area.

5. The _____ command allows you to change the national language settings.

6. The _____ command loads an installable device driver into conventional memory, and _____ loads one into reserved memory.

7. Enter the two statements required to load DOS into extended memory:

   _____

   _____

8. The _____ command simulates extended memory as expanded memory.

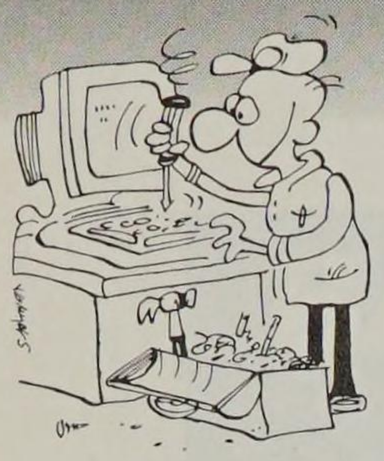
9. _____ speeds up file access time by opening frequently used files and tracking their locations in memory rather than from the directory on disk. It works in conjunction with the _____ command.

10. The _____ command allows you to execute another command processor.

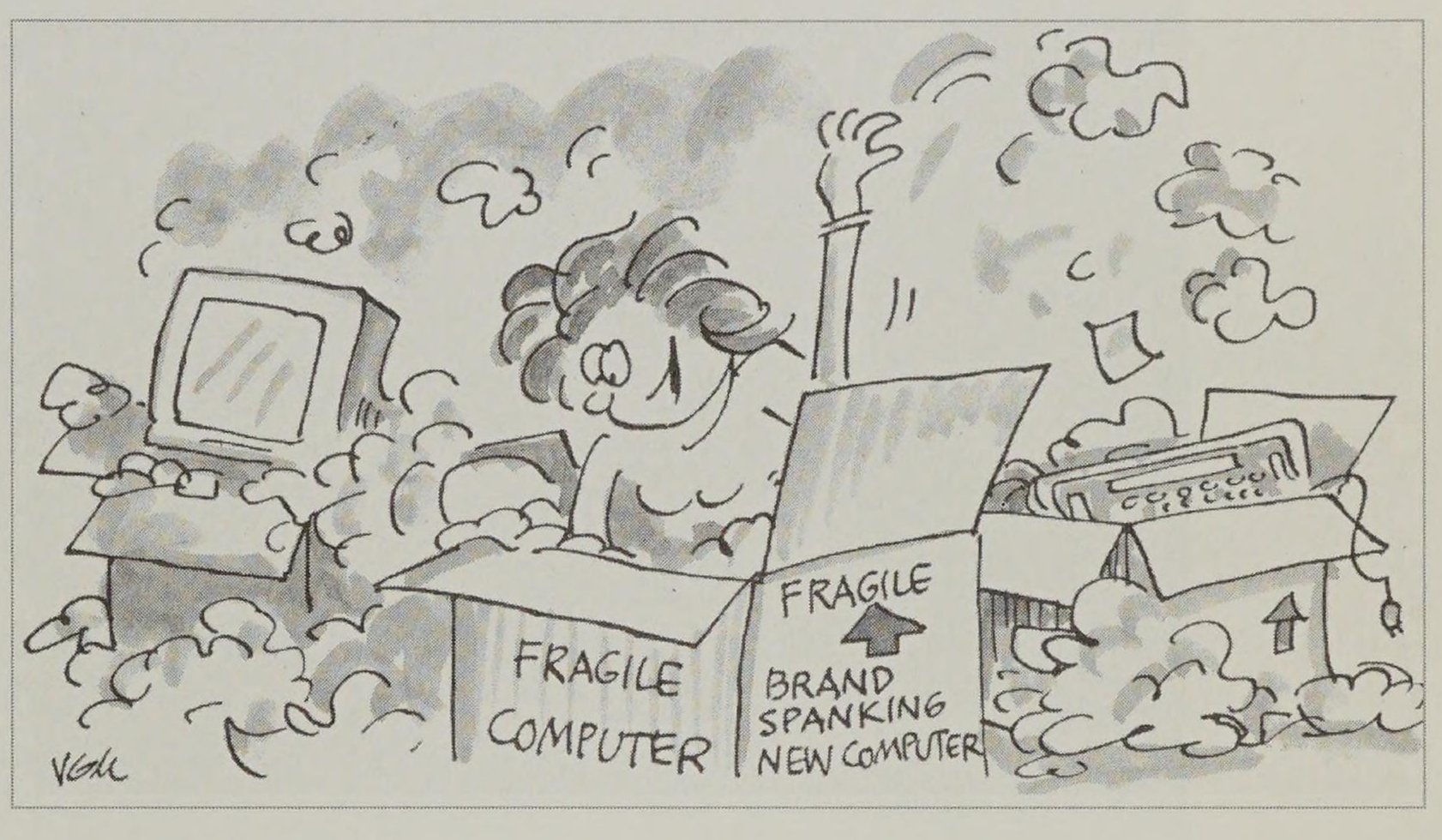
11. _____ contains a list of the drives and directories to be searched when a program is not located in the current directory.

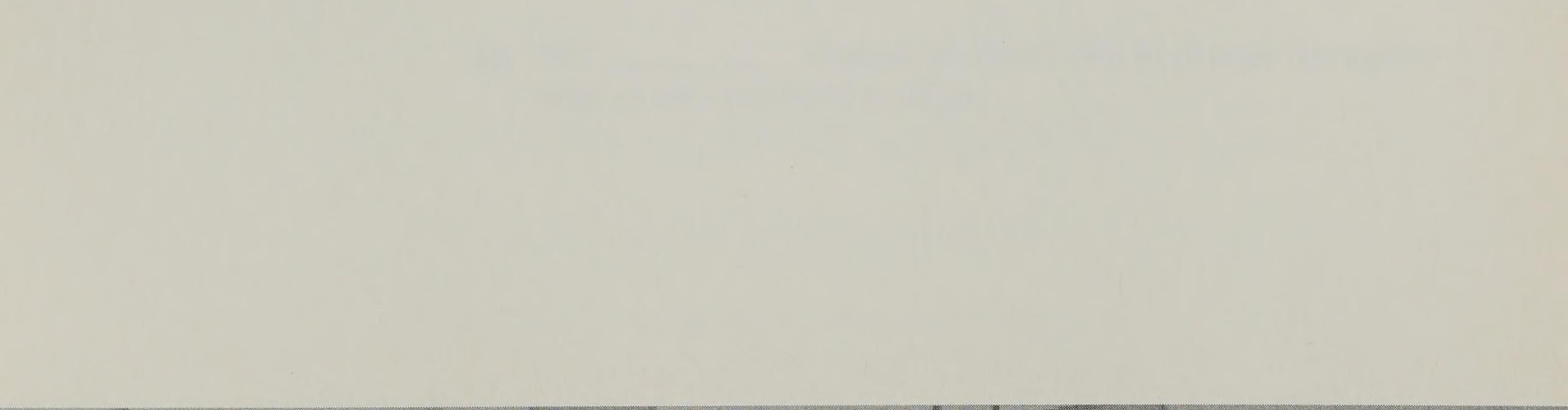
12. The _____ command allows you to change the appearance of the command prompt.

THINKING ON YOUR FEET



You have just bought a computer and you want to get it up and running. To make sure that the computer performs as planned, create a CONFIG.SYS file and AUTOEXEC.BAT file for this computer. This computer has a lot of memory so you want to put DOS in the high memory area. You want to be able to have as many as 99 files open at once. You want the CONFIG.SYS file to load the mouse device driver (assume C:\DOS\MOUSE.SYS) so you can use it in other applications. If you do not have a mouse attached to your system, make the command a remark. For the AUTOEXEC.BAT file, have the batch file load SMARTDrive and DOSKEY, both in the DOS directory. Set DOS to look for executable files that are not in the program directory in the following directories: the root directory, \WP60, \WORD, \123R24, \DBASE, \DOS, \QPRO, and \WINDOWS.





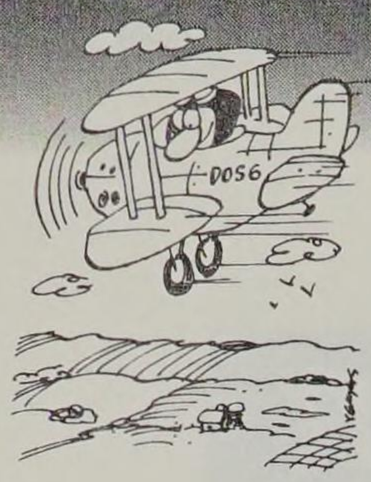
CHAPTER 12

BACKUP AND OTHER HARD DISK TASKS

After completing this chapter, you will be able to:

- Explain the importance of backups.
- Learn the different types of devices used for backups.
- Back up files.
- Restore files from a backup.

OVERVIEW



Backing up documents is usually one of the last tasks a new user gives much thought to, until something goes wrong. One of the reasons for this is that a new user, who can only absorb so much at one time, is going through a a lot of learning. Other users play the odds, betting that they will never encounter a computer catastrophe. However, new users and odds players can discover, quickly and unpleasantly, the very real need to back up files.

In this chapter, we cover protecting your investment of time and effort with regular backups and related hard disk tasks. MS-DOS's MS Backup utility provides insurance that allows you to recover from hardware problems you may encounter during your computer career. You will find this insurance very beneficial especially when you move beyond this course and want to protect your investment of time and work in the data and documents on your own computer. You should refer to the instructions in this chapter again and again to protect all the work that you do on the computer.

THE IMPORTANCE OF BACKUPS

With computer programs becoming more powerful and sophisticated each year, as well as just larger, systems without hard drives are becoming obsolete. Most users work on a computer system that contains a hard drive for storing programs and data files. Because of the speed and efficiency of working on a hard drive, users often find it easy to neglect the extra step of backing up new or changed data files.

PROBLEMS THAT CAN OCCUR

Many different problems can cause loss of data. One of the most common is a power failure. When the power to a computer is cut off, even momentarily, you lose whatever data is in the computer's memory (RAM). If your system is connected to a UPS (uninterrupted power supply) that uses a battery as a source of power, you have from 15 to 30 minutes of power left, depending on your UPS, after your power goes off, to save and close files successfully. Uninterrupted power supplies, however, are costly.

A hard disk crash occurs when the read/write head damages the surface of the hard disk. In this case, the hard drive is no longer usable and must be replaced. All of the information on the disk is lost. A hard disk may develop a bad sector. DOS prevents data from being written on bad areas of the disk. However, the data that occupied a sector before it became damaged cannot be recovered.

Human error can also cause hard disk problems. For example, you may accidentally delete a file containing data you need and not restore it with a DOS utility before it becomes unrecoverable. Sometimes, a file may be modified accidentally, destroying the original version of the file.

DEVELOPING A GOOD BACKUP STRATEGY

If you have not planned and implemented a backup strategy to store your programs and other important files, the loss of data can prove to be very costly.

Two decisions need to be made when developing a backup procedure. The first decision is how often to back up data. However often you choose, the backup procedure must be done regularly. One procedure could be that all files, whether new or old, are backed up once a week. If you back up your files to tape, this tape would be labeled COMPLETE BACKUP. Also, all new or changed files are backed up daily to a different tape for each day. Each tape is labeled MONDAY, TUESDAY, and so on. By rotating the daily tapes, you are able to restore any files since the last complete backup.

When you back up a network, you should not include any files that are open. The best time to back up a network is when no one is logged in.

The second decision you need to make is where to store the backup files. You should have at least one copy of backup files in off-site storage, that is, a copy of your data files is stored physically off the working premises. Without off-site storage, if your office suffered fire or water damage and your on-site backups were destroyed, you would have no way to restore your data files. Recreating those data files would be time-consuming and difficult at best, and might be impossible.

BACKUP DEVICE OPTIONS

Your backup plan also includes the type of device you use to store the backup data. Data can be copied from the hard disk to floppy disks. Using floppy disks requires that someone monitor the backup procedure and change the disks as they become full. This also requires many disks to handle the volume of data stored on a hard disk. Do not use a backup disk for other purposes until you have made another backup disk; otherwise, you cannot restore the data.

You can also use a tape drive as a backup device. Tapes come in different storage capacities. One advantage of using a tape drive is that you may require only one tape for a backup instead of a series of floppy disks. Tape drives are often used in a network environment. The tape drive is then connected to a tape card located inside the file server, which is the main file storage device for the entire network. A file server is really nothing more than a very large hard disk with a capacity of several hundred megabytes. Data stored on the file server's hard drive is copied to the tape in the tape unit. Individual computers in the network, called network nodes, can access the

data stored on the file server. Some network nodes may have their own hard drives. A network node containing a tape card can also use the tape drive attached to the file server to back up its hard drive.

BACKING UP FILES WITH MSBACKUP

You can back up files using the COPY or XCOPY commands, but this is only efficient when backing up a few files. When carrying out a regular backup procedure which backs up many files at a time, you want to use DOS 6's new MSBACKUP command. One advantage of using the MSBACKUP command instead of the other two commands is that it can divide a large file into smaller files. Therefore, when a file cannot completely fit onto a disk, it is continued on the next disk. Both disks are needed to restore a split file.

The MSBACKUP command starts a menu-driven utility that lets you back up and restore your hard drive in many ways.

To use this utility to create a setup file and back up files on your hard or other fixed disks:

1. Enter **MSBACKUP** at the DOS prompt.
2. Select the **Backup** button by pressing Alt-B or by moving to that button with the arrow keys and then pressing Enter↵.

This opens the Backup dialog box, shown in Figure 12-1. You will use the options of this dialog box to set which files you want to back up, and how you want them backed up.

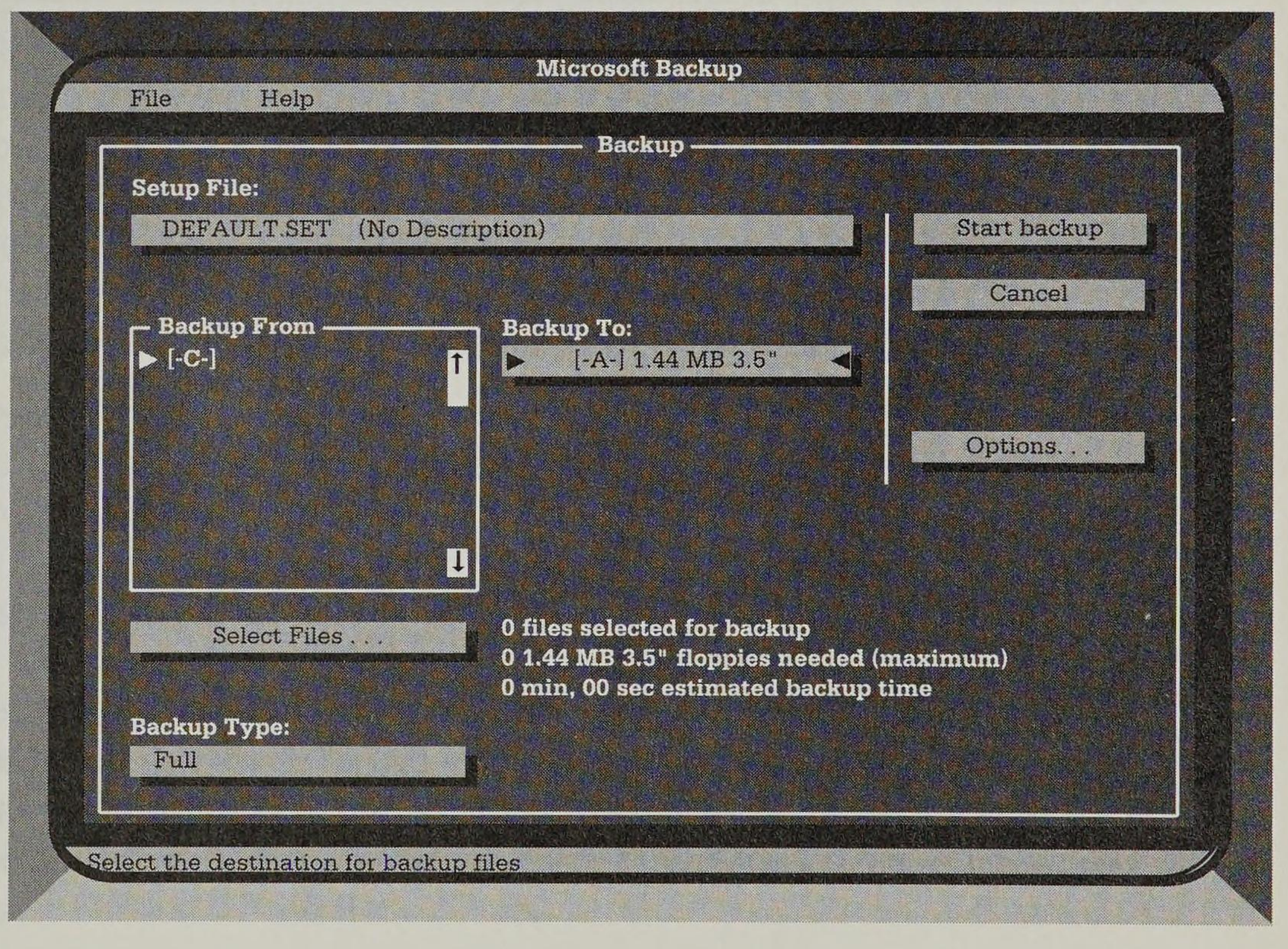


Figure 12-1 The Backup dialog box

3. Select a setup file by selecting the **Setup File** button.

   The setup file contains the settings for which files to back up, where to back up them up to, and how to back them up. If you have not yet created a setup file, you can skip this step.

4. Select the files you want to back up.

   To choose to back up all of the files on a drive, select the drive or drives from the Backup From list box by highlighting the drive letter with the arrow keys and pressing Spacebar. "All Files" appears in the Backup From list box beside the drive letter.

   To choose specific directories or files on a disk to back up, select the **Select Files** button, opening the Select Files dialog box, which contains drive icons, a directory tree, and a file listing just like the DOS Shell. You can highlight directories or files in the directory tree and file listing and press Spacebar to select them. When you are finished in this dialog box, select **OK** to return to the Backup dialog box. The phrase "Selected Files" appears beside the drive letter in the Backup From list box.

5. Select where you want to back up files.

   Select the **Backup To** button, opening the Backup To dialog box. This dialog box displays option buttons for the available drives or devices to which you can back up the contents of your hard or fixed drives. Select the correct option button by pressing Alt and the highlighted or underlined letter in the option, then select **OK** to return to the Backup dialog box.

6. Select the type of backup you want to carry out by selecting the **Backup Type** button, opening the Backup type dialog box.

   The three backup type options are Full, Incremental, and Differential. When you select Full, DOS backs up all the files in the selected drives and directories and removes the archive attribute from these files. When you select Incremental, DOS backs up only those files, in the selected drives and directories, that are new or have changed, which means they have the archive attribute, and then removes the archive attribute from those files. When you select Differential, DOS backs up only the new files with the archive attribute, but does not remove it once they are backed up. After making your selection from this dialog box, select **OK** to return to the Backup dialog box.

7. Select **Start Backup** to begin the backup procedure.
8. Replace the floppy disk when Backup prompts you to.
9. Select **OK** when Backup displays the Backup Complete dialog box, which shows you how the backup process went.
10. Select **Quit** to exit the Backup utility.

MS Backup creates a catalog, by default, which is your index of which disk contains each backup file. This log file is saved in both the DOS directory and with the backed up files. To view the catalog, you can use the DOS Editor. See "The Inside Scoop of Catalog File Names" to learn how the catalog files are assigned names with meanings.

THE INSIDE SCOOP ON CATALOG FILENAMES

MS Backup assigns catalog files meaningful names. However, if you do not know the code that MS Backup uses, you not only will not understand what the filename signifies, you may have trouble figuring out which file is your catalog file.

The first two characters tell you which drives were backed up in the back-up procedure which created the catalog file. The first character in the catalog file's name is the letter of the first drive that was backed up. The second character indicates the last drive that was backed up.

The next five characters tell you when the backup was done. The third character in the catalog file's name is the last digit of the year. For example, 3 would be the third digit for a backup done in 1993. The next two characters indicate the month, for example, 03 for March. The next two characters indicate the day, as in 08 for the eighth of March.

The last character in the catalog file's name tells which backup of that type from those drives on that day the catalog indicates. For example, if you did three incremental backups from drives C and D on the eight of March, 1993, the catalog file name would be the same except for the last character. For the first backup it would be A, the second would be B and the third C.

Your catalog file can have one of three extensions, depending on what type of backup it was. If it was a full backup, in which all selected files are backed up and the archive flag is lowered, the file extension is .FUL. An incremental backup, in which all files with the archive flag are backed up and the archive flag is lowered, has the file extension, .INC, and a differential backup, in which all files with the archive flag are backed up and the archive flag is not lowered, uses .DIF.

The archive flag is an attribute which DOS assigns to new files and files that have changed since the archive flag was lowered last. Essentially, it is a note that DOS writes to itself for use when you are backing up files. Because the archive flag is raised only for files that are new or have changed, and the MS Backup command can lower this flag, you can be sure of only backing up new or changed files, instead of wasting time and disk or tape space backing up files that have not changed since your last backup.

For example, if you found some unlabeled backup disks, you would look for the catalog file. If you saw that the catalog file was called CH30308B.INC, you would know that the backup disks contained the incremental backup from drives D and H done on the eight of March, 1993.

GUIDED TUTORIAL 12-1

One of the great advantages of the BACKUP command is the ability to select which files you want to back up. You will usually not want to back up program files, because you should have the original program disks already stored somewhere. You can select files in a specific directory for backup. If you store all of your word-processing files in the root directory of your hard drive, you may want to back up your root directory on a regular basis. To back up all the files in the root directory of the hard drive, follow these steps.

STEP 1 Enter **MSBACKUP** at the DOS prompt, opening the MS Backup utility.

STEP 2 Select the **Backup** button, opening the Backup dialog box.

STEP 3 Press Alt-K to move to the Backup From list box.

STEP 4 Use the arrow keys to highlight the letter for your hard drive.

STEP 5 Press Alt-L to open the Selected Files dialog box.

STEP 6 Move to the root directory in the directory tree, if necessary.

STEP 7 Press Alt-N to open the Include dialog box.

STEP 8 Press Tab to move to the File text box, then type ***.***.

STEP 9 Press Tab, then Spacebar to clear the checkmark from the Include All Subdirectories settings.

STEP 10 Select **OK**.

STEP 11 Press Alt-A to open the Backup To dialog box.

STEP 12 Select the **Option** button for drive A.

STEP 13 Select **OK**.

STEP 14 Select **Start Backup**.

GUIDED TUTORIAL 12-2

If you have been borrowing a computer system for a short period of time, you may know that your files will only be created after a certain date. Rather than backing up the owner's files along with your own, you can back up only files created after the date you borrowed the computer. To back up only those files on your hard disk created today, follow these steps:

STEP 1 Enter **MSBACKUP** at the DOS prompt, opening the MS Backup utility.

STEP 2 Select the **Backup** button, opening the Backup dialog box.

STEP 3 Press Alt-L to open the Select File dialog box.

STEP 4 Press Alt-S to open the Special Selection dialog box.

STEP 5 Press Alt-A to select the Apply Date Range.

STEP 6 Press Tab⇆ to move to the From text box and enter today's date.

Make sure that you use the same format for the new date as the default date that appears in this text box. No files will be backed up that were created or last saved before the From date. If you do not change the default date of 1-01-80, all files before the To date are backed up, since you cannot have a file before that date.

STEP 7 Press Tab⇆ to move to the To text box and enter today's date again.

Make sure that you use the same date format as the default date which appears in the text box. No files created or last saved after the To date will be backed up.

STEP 8 Select **OK** to return to the Select File dialog box.

STEP 9 Select **OK** again to return to the Backup dialog box.

You will not need to select where to back up the files again, since Backup uses the same settings as you chose last time.

STEP 10 Select **Start Backup**.

GUIDED TUTORIAL 12-3

Unless you save the settings you have created in MS Backup to a specific file name, they are saved in the DEFAULT.SET setup file. You can also save your MS Backup settings to a named setup file. Many people do not back up files because of the time it requires to set up the backup process. You can create a setup file for quickly backing up the batch files in the root directory of your hard drive every Friday, using the same settings.

STEP 1 Enter **MSBACKUP** at the DOS prompt, opening the MS Backup utility.

STEP 2 Select the **Backup** button, opening the Backup dialog box.

STEP 3 Press Alt-L to open the Select File dialog box.

STEP 4 Press Alt-N to open the Include Files dialog box.

STEP 5 Press Tab⇆ then type ***.bat**.

STEP 6 Press Tab⇆, then Tab⇆ to clear the checkmark from the Include All Subdirectories setting.

STEP 7 Select **OK** twice to return to the Backup screen.

STEP 8 Select **File|Save Setup As**, opening the Save Setup File dialog box.

STEP 9 Enter **STUDENT1.SET** for the file in the File Name text box.

Remember to include the .SET file extension. Note where this file is going to be saved, which is the directory name that appears in the upper-left corner of the dialog box. You will use this directory name in a moment.

STEP 10 Enter **Backing up my files of the setup file** in the Description text box.

The description will make it easier for you or another user to identify and choose this file later.

STEP 11 Select **Save**.

When you return to the Backup dialog box, you will see that the Setup File button now shows the name of the setup file you just saved. Anytime you want to backup files in the future, you can select the Setup File button, and select the new setup file from the list.

STEP 12 Select **Cancel** then **Quit** to return to the DOS prompt.

STEP 13 Type **CD** and the name of the directory that your setup file was saved to, then press Enter↵.

STEP 14 Insert your Student disk in Drive A.

STEP 15 Type **MOVE STUDENT1.SET A:** and press Enter↵ to move the setup file that you created to your student disk.

You need to copy the settings file back to the DOS directory before using it.

ON YOUR OWN EXERCISES

1. Back up the files on your hard disk's root directory that have a .BAT extension onto a Work disk in drive A. Use the DIR command, directed to the printer, to create a printout showing the catalog file.

2. Back up files in your DOS directory that have a .BAS extension onto a Work disk in drive A. Use the DIR command, directed to the printer, to create a printout showing the catalog file.

3. Save a setup file that will back up all the files created on your hard drive in the last two weeks . Call this setup file FTNIGHT.SET. Use TYPE, directed to the printer, to print the contents of this file.

RESTORE FILES WITH MSBACKUP

The files on a backup disk are not stored in their original format, and cannot be accessed with the COPY or XCOPY command. To retrieve a backup file, you must first restore it to its original format using the MSBACKUP utility.

The MSBACKUP utility lets you restore selected files backed up with the same utility.

To restore backup files.

1. **Enter MSBACKUP at the DOS prompt.**

2. Select the **Restore** button by pressing Alt-R or by moving to that button with the arrow keys and then pressing Enter↵.

   This opens the Restore dialog box, shown in Figure 12-2. You will use the options of this dialog box to determine which backup files you are going to restore and how you want them restored.

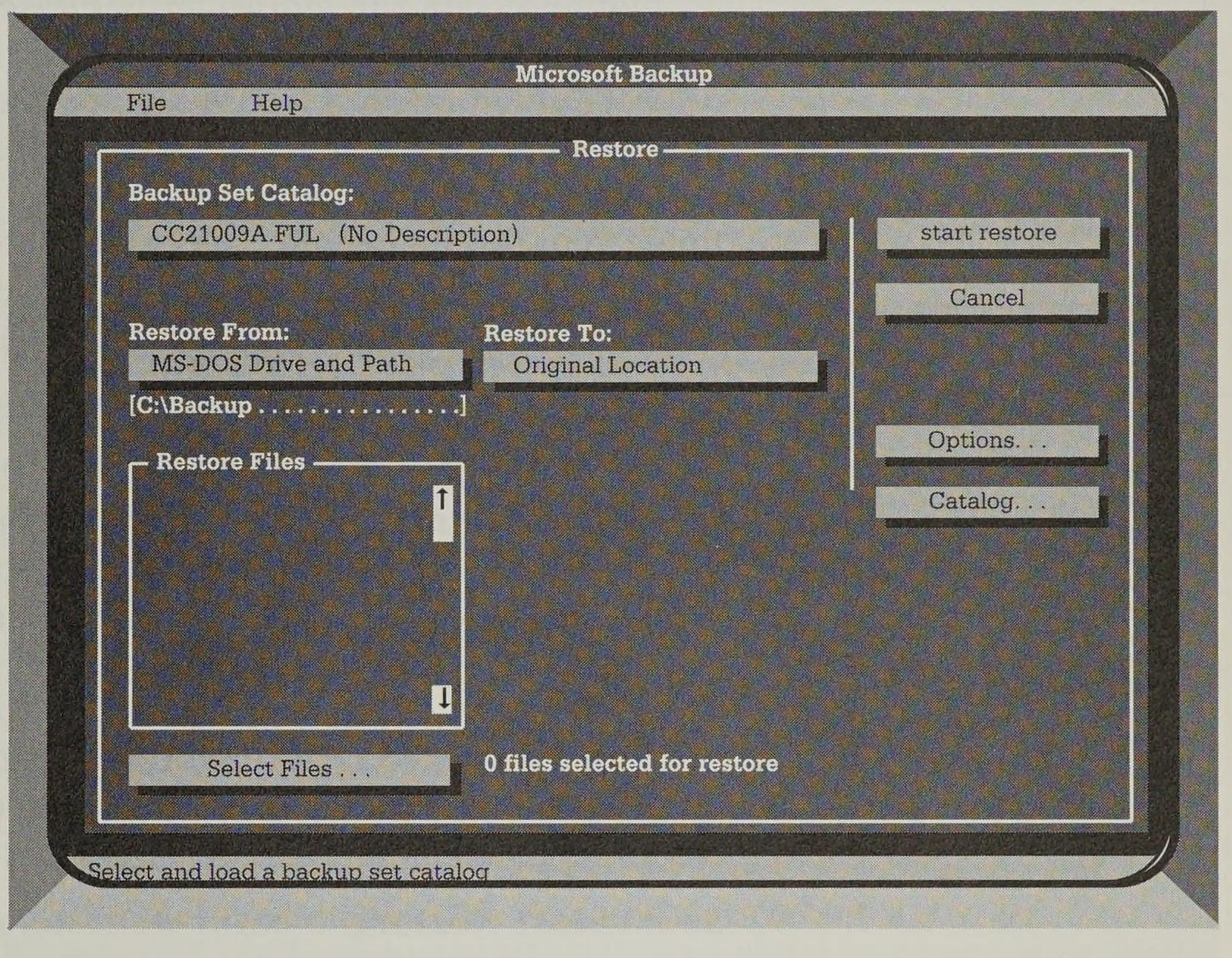


Figure 12-2 The Restore dialog box

3. Select the backup catalog by selecting the **Backup Set Catalog** button.

   This opens the Backup Set Catalog dialog box. Select the catalog for the backup files you want to restore by highlighting it in the Catalog Files list, then selecting **Load**. If the correct backup catalog already appears on this button, then you do not need to select it.

4. Select the **Restore From** button to change where DOS can access the backup file.

   If this button already displays the location of the backup files, you do not need to change it. Selecting this button opens the Restore From dialog box. This dialog box displays option buttons for the available drives or devices to which you could have backed up the contents of your hard or fixed drives. Select the correct option button by pressing Alt and the highlighted or underlined letter in the option, then select **OK** to return to the Restore dialog box.

5. Select the drives and files you want to restore.

   To restore all files backed up from a drive, select the drive or drives from the Restore Files list box by highlighting the drive letter with the arrow keys and pressing Spacebar. All Files appears in the Restore Files list box beside the drive letter.

   To choose specific directories or files to restore , select the **Select Files** button, opening the Select Files dialog box, which contains drive icons, a directory tree, and a file listing just like the DOS Shell. You can highlight directories or files in the directory tree and file listing and press Spacebar to select them. When you are finished in this dialog box, select **OK** to return to the Restore dialog box. The phrase "Some Files" appears beside the drive letter in the Restore From list box.

6. Select where you want to restore the files.

   Select the **Restore To** button, opening the Restore To dialog box. You can restore to the original locations, to other drives, and DOS will recreate the directory structure from the original disk to restore the files to the original directories. DOS prompts for the drive to restore the files to during the restoration process. You can select to restore the files to new directories. DOS prompts for those directories during the restoration process. When you have made your selection, select **OK** to return to the Restore dialog box.

7. Select **Start Restore** to begin the restoration procedure.

8. Select **OK** when Backup displays the Restore Complete dialog box, which shows you how the restoration process went.

9. Select **Quit** to exit the Backup utility.

GUIDED TUTORIAL 12-4

You can restore a group of selected files. For example, if another user accidentally deleted all of the files in your root directory, you could restore the files you backed up earlier in the chapter from the backup disk in drive A to the root directory of drive C.

STEP 1 Start the Backup utility and select **Restore**.

STEP 2 Select the **Backup Set Catalog** button, highlight the catalog for the backup procedure carried out in Guided Tutorial 12-3, and select **Load**.

STEP 3 Press Alt-I to move to Restore Files.

STEP 4 Highlight the **C:** drive letter and press Spacebar.

STEP 5 Select **Start Restore**.

You do not need to select individual files since you already know that this particular backup only included the files that you now want to restore, those in the root directory.

GUIDED TUTORIAL 12-5

You can also restore a single file. For example, you might have backed up a copy of an AUTOEXEC.BAT file from your old computer that you want to use with a new computer. To restore that AUTOEXEC.BAT file so that you can use it on another system, insert the backup disk in drive A and follow these steps:

STEP 1 Press Alt-K.

STEP 2 Select the backup catalog from the Catalog Files list box that you used in Guided Tutorial 12-3.

STEP 3 Press Alt-L to select Load, and return to the Restore dialog box.

STEP 4 Press Alt-L to select Select Files and open the Select Files dialog box.

STEP 5 Press Tab to move to the file listing.

STEP 6 Use the arrow keys to highlight AUTOEXEC.BAT file.

STEP 7 Press Spacebar.

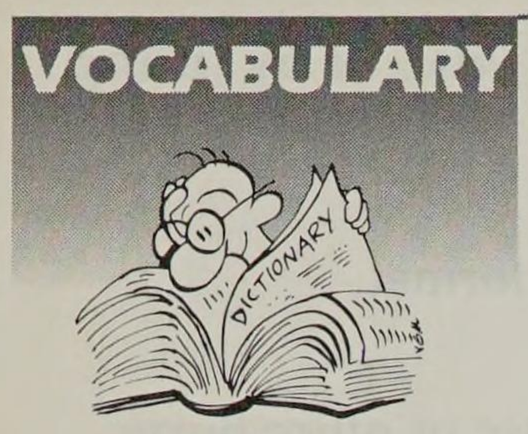
STEP 8 Select **OK**.

STEP 9 Select **Start Restore**.

ON YOUR OWN EXERCISES

1. Using the Work disk from On Your Own Exercise 1 of the BACKUP section, restore the contents to another Work disk in drive B. Use the DIR command to view the restored files and direct the output to the printer.

2. Create a temporary directory in the root directory of your hard disk, called TEMP. Restore the files from the backup disk created in On Your Own Exercise 2 (files with a .BAS extension) of the BACKUP section to this directory. Use the DIR command to view the restored files and direct the output to the printer. Delete the TEMP directory and the files it contains



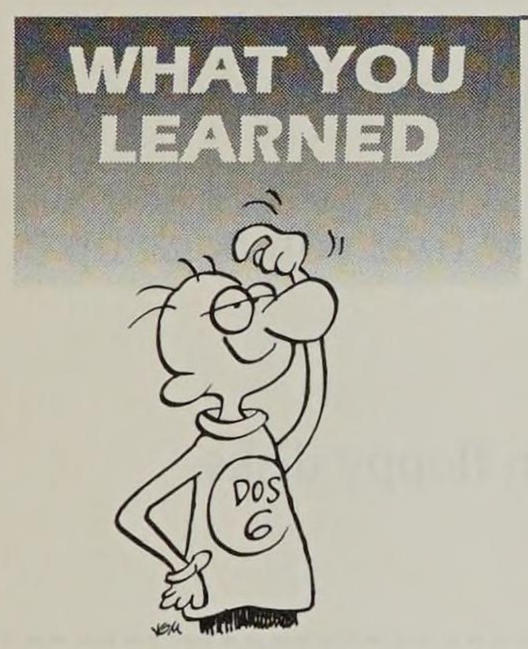
Back up
The process of copying files to a disk for storage. The MSBACKUP utility stores such files in a special format.

File Server
A computer with a very large hard drive that serves as the main file storage location for a network.

Network node
An individual computer that can access files found on the file server of the network.

Off-site storage
A disk or tape containing backup files that is stored off the work premises. This ensures against files being destroyed if the work area and its contents suffer unrecoverable damage.

Restore
The process of retrieving files from a backup disk to another disk. The MSBACKUP utility decodes and expands the backup files it creates into usable files.



In this chapter, you learned about backing up and restoring files from your hard disk. Some of the things you have learned are:

- How to back up on tape drives and floppy disks.
- The importance of backups.
- Some of the things that can cause damage to your hard drive.
- How to back up files using the new MSBACKUP utility.
- How to restore files using the new MSBACKUP utility.

REVIEW QUESTIONS

Answer each of the following with *true* or *false*, or by filling in the blank.

1. The _____ utility stores files in a special format.

2. Your backup files are safe, even if your house or office burns down around them.

3. An _____ will prevent you from losing data when the power goes out.

4. You can restore files to a disk other than the one you originally backed them off of.

5. If you do not save your files, you ccannot back them up.

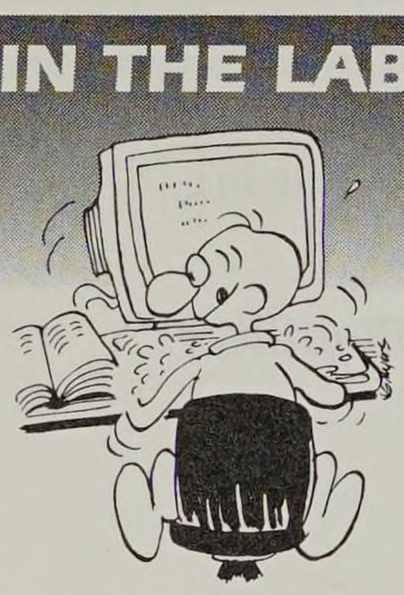
6. If your hard disk is physically damaged by the read/write head, you can save all the data from it.

7. You can back up files from several drives with one procedure.

8. Using a setup file for backing up files ensures that you back up the same drives and directories every time.

9. Tape drives can hold more information than floppy disks.

IN THE LAB



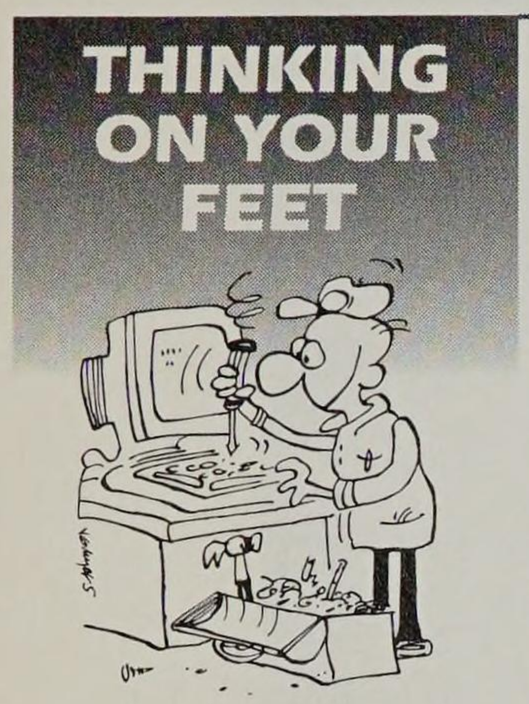
1. Back up the contents of your DOS directory that were saved after 5/31/93. Save the setup file with the filename DOSPOST5.SET, and the description All DOS files after May 1993.

2. Back up the CONFIG.SYS and AUTOEXEC.BAT files in your hard disk's root directory, along with the COUNTRY.SYS, APP-NOTES.TEXT and NIBBLES.BAS files in your DOS directory. Save the setup file with your last name as the filename and the description "Two directories of files."

3. Restore the first three files you backed up using the DOSP0ST5.SET setup file.

4. Restore the NIBBLES.BAS and APPNOTES.TXT files to your hard drive.

5. Restore all of the files that you backed up in Exercise 2 to the TEMP directory on your hard drive, then delete the TEMP directory again.



All of the budget information for your department was lost when a tornado destroyed your office building and your entire computer network. With lots of work, you can recreate the necessary files using information on file at other offices, but your boss has asked you to set up a backup policy so that it is never again necessary to re-enter so much data. Draw up a policy for creating regular backup files and providing for their storage.

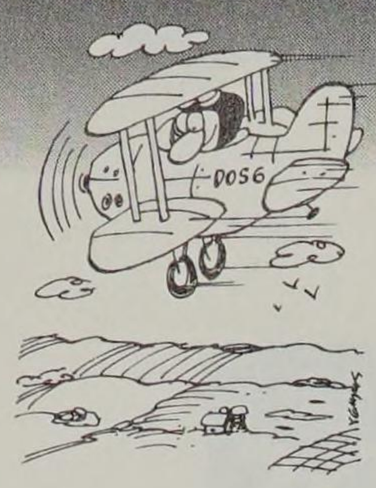
CHAPTER 13

MORE DOS COMMANDS

After completing this chapter, you will be able to:

- Search for data files not in the current directory.
- Assign a different drive letter to an existing drive.
- Change how a hard disk is partitioned.
- Recover files from a defective disk.
- Replace files on a disk with files from another disk.
- Transfer the system files to a formatted disk.

OVERVIEW



Now that you have mastered basic DOS commands, you will want to add a few specialized commands to your toolkit of options. We include these commands to provide a more complete look at DOS. Most of the commands in this chapter should not be used on classroom computers. You will find these commands useful to you on your personal computer, or in a work environment.

USING APPEND

Earlier in this book, you learned to use a PATH command to your AUTOEXEC.BAT file or at the DOS prompt. The PATH command sets a list of directories for DOS to check when it cannot find a file needed by the program you are executing in the current directory. The PATH command is only used when DOS is searching for program files.

You can perform a similar search for data files using the APPEND command. A data file is any file that does not contain a program instruction. The APPEND command allows you to establish a list of directories. When you try to access a data file that is not in the current directory, DOS searches the directories listed in the APPEND path for the data file. First the current directory is searched and then the APPEND path, just as DOS checks the PATH statement last, when searching for a program file. When two files, one in the current directory and the other in appended directory, have the same name, DOS uses the file in the current directory. The DIR command does not show files from appended directories.

APPEND COMMAND SYNTAX

The APPEND command sets a search path for data files extending beyond the current directory. The APPEND command can be entered several ways since it supports both parameters and switches.

The syntax for the APPEND command is:

```
APPEND [/x][/e]

APPEND

APPEND ;
```

APPEND entered by itself displays the current appended directories for data files.

[drive:]path specifies the drive and directory to be appended to the current directory. Multiple entries must be separated by semicolons (;).

/path:on|/path:off tells DOS to search appended directories for data files when a pathname is included for the data file or to search appended directories only when no directory information is provided. The default is /path:on.

APPEND [[drive:]path[;...]][/x[:on|:off]][/path:on|/path:off][/e]

The **semicolon** (;) entered after APPEND cancels any directory list previously appended.

/x[:on|:off] specifies whether DOS searches appended directories for executable files. The default setting, /x:off, has DOS look for executable files in the current directory only . Use /x:on or /x in the first APPEND command of the session to have DOS search current and appended directories for programs.

/e, which can only be used the first time you use APPEND, assigns the appended directories to the APPEND environmental variable. Use the SET command to see the variable's contents.

The APPEND command is useful when you work with files in more than one directory, but want to avoid constantly changing the active directory. For example, if you are working with data files in C:\GRANTS\REPORTS and A:\LETTERS, you can append these two directories to the current directory by typing:

APPEND C:\GRANTS\REPORTS;A:\LETTERS

When DOS cannot locate a data file in the current directory, it first searches the C:\GRANTS\REPORTS directory; then, if no match is encountered, the A:\LETTERS directory, as shown in Figure 13-1.

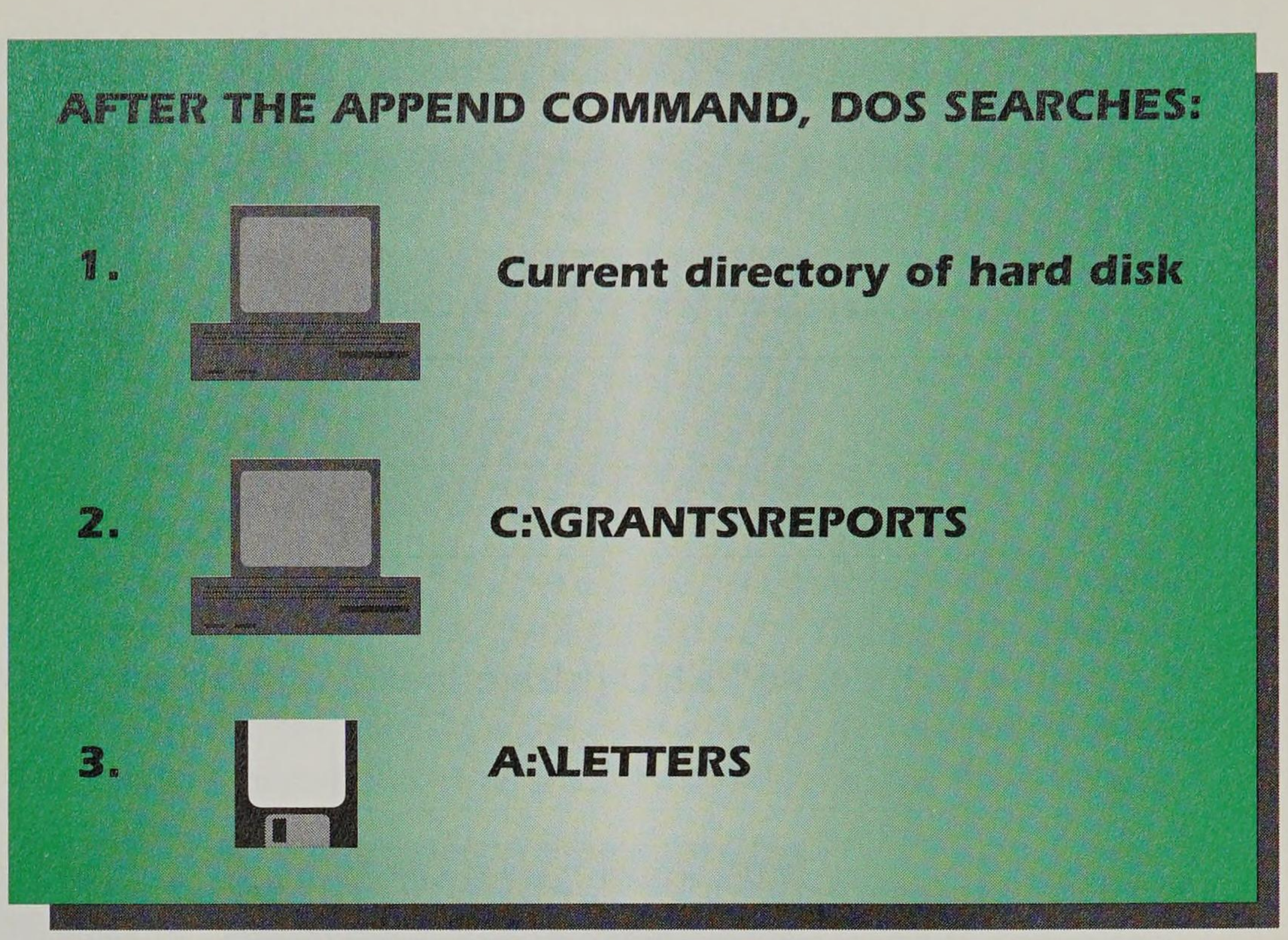


Figure 13-1
DOS looks for a data file in the current directory and then searches the APPEND paths

Instead of entering the APPEND command each time you want DOS to access multiple directories when looking for a data file, you can create a DOS environment variable called APPEND. A DOS environmental variable is a special location in your computer's memory that has a name and a value of some kind assigned to it. You create the APPEND variable, and assign the list of directories to be searched to that variable as the variable's value. Whenever you enter a command that accesses a data file that cannot be found in the current directory, DOS will know to automatically search the other paths assigned to the APPEND variable.

To assign a list of directories to the APPEND environmental variable:

1. Type **APPEND <directories> /E** and press Enter↵.

For example, to append the \123WKSHT and \WPDOCS directories, type **APPEND C:\123WKSHT;C:\WPDOCS /E**, then press Enter↵. This must be the first APPEND command entered during the current DOS session.

To display the list of directories assigned to the APPEND environmental variable:

1. Type **APPEND** and press Enter↵ at the DOS prompt.

USING ASSIGN

You may come across an older program that can only access files on drives A and B. This is inefficient since you are not taking advantage of the faster disk access time for the hard disk. With the ASSIGN command you can store files on drive C, yet access them as if they were on drive A or B, effectively fooling the older program.

ASSIGN COMMAND SYNTAX

DOS lets you assign a different drive letter to an existing drive with the ASSIGN command. Once entered, all requests are redirected to the drive assigned to the letter.

The syntax for the ASSIGN command is:

ASSIGN entered by itself redirects all drive letters to their original drives.

y specifies the drive that the assigned drive letter will refer to. It also must be a letter.

```
ASSIGN
ASSIGN [x=y][/status]
```

x specifies the drive to reassign to another drive. The value must be a letter.

/status or ***/s*** displays the current assigned drive.

There are a number of incorrect uses of the ASSIGN command that you should be aware of. See Table 13-1 for a listing of actions you should not carry out with ASSIGN.

INCORRECT USES OF ASSIGN

- Do not assign your hard disk to the letter of another drive.
- Do not use ASSIGN for a drive that is currently in use by a program.
- Do not assign the drive letter of a hard disk that does not exist for either the x or y parameter.
- Do not use ASSIGN with the commands BACKUP, JOIN, LABEL, RESTORE, and SUBST since they require drive information.
- Do not assign the drive where the file COMMAND.COM is stored to another letter since DOS will not be able to find COMMAND.COM.
- Do not use ASSIGN with the commands DISKCOPY and FORMAT since they ignore drive assignments.

Table 13-1 Incorrect uses of assign

When your program can access files in drive A and drive B only, you can redirect both drive assignments to drive C by typing:

ASSIGN A=C B=C

Now DOS looks for the program and data files on drive C. When you want to display a list of the current drive assignments, type **ASSIGN /STATUS**. When you want to redirect drives A and B to their original assignments, type **ASSIGN**.

If you were to enter ASSIGN A=C and then later ASSIGN B=C, drive A would no longer be assigned to drive C. A new assignment cancels the previous assignment.

USING FDISK

You have the option of using your entire hard disk as one unit or dividing it into partitions. Partitions are sections of a hard disk that can be used as different drives or for different operating systems. Unlike directories, the division between partitions are physical. Creating multiple partitions is exactly like cutting a pizza into different slices.

You can partition a hard disk when you set up a new computer system or when you want to erase and reconfigure your current hard disk. With DOS 6, you are not limited to partitions of 32MB, as with some earlier releases of DOS. You can use the entire disk as one partition. You can still create up to four partitions if you want to have these divisions for use with different operating systems. Only one partition can be the primary DOS partition, which is a partition that uses DOS that boots your system.

A logical drive is a part of an extended DOS partition that is identified by a different drive letter. A logical drive is not a separate physical drive, yet DOS treats it as a separate physical drive. For example, drives D and E are logical drives of drive C. Partitions used by other operating systems cannot be divided into logical drives. The primary DOS partition, the one you boot DOS from cannot be divided into logical drives. Only the extended DOS partition, which is a DOS partition that is not used to boot DOS can be divided into logical drives.

***** WARNING *****
DO NOT TRY TO REPARTITION THE DISK DRIVES IN THE STUDENT LAB!!

You may want to perform the FDISK command to partition your hard drive before you format a hard disk during your initial installation. Once the disk is partitioned, you can format each logical drive. Do not repartition and format a drive that is in use without backing up all the data on the disk. Otherwise that data is lost forever.

One common use for partitioning your drive is to let you run different operating software on one computer system. Another common use is for when two or more people are using one computer system. You can partition the hard disk, then create logical drives in the second partition and assign each user one logical drive. This prevents one person from accidentally deleting or saving over the files of another person. You can use a PATH statement so that you only need to install programs once, in the primary DOS partition, but different users can safely use different logical drives, without having to worry about the other person's files.

FDISK COMMAND SYNTAX

When you install DOS, you are asked how the drive should be partitioned. Later, you may change your mind about how the drive was originally configured. The FDISK command allows you to display or change how a hard disk is divided into partitions or how an extended DOS partition is divided into logical drives. An extended DOS partition is a partition or logical drive that uses DOS as the operating system, but is not used to boot your system. The primary DOS partition is a partition of your hard drive used with DOS, which is actually used to boot your system.

You can create as many as four partitions on your hard drive. One of these must be the primary DOS partition.

The syntax for the FDISK command is simply:

FDISK

After you type FDISK at the command prompt, DOS displays the FDISK Options menu, as shown in Figure 13-2.

```
MS-DOS Version 6.00
Fixed Disk Setup Program
(c)Copyright Microsoft Corp. 1983 - 1991

FDISK Options

Current fixed disk drive: 1

Choose one of the following:

1. Create DOS partition or Logical DOS Drive
2. Set active partition
3. Delete partition or Logical DOS Drive
4. Display partition information


Enter choice: [1]


Press Esc to exit FDISK
```

Figure 13-2
Select the number of the option you want to perform. Press Esc to return to a prev ious menu. To quit FDISK, press Esc from the main menu

DISPLAYING PARTITION INFORMATION

To display how your hard disk is configured:

1. Type **4** and then press Enter↵.

   This will select Display partition information from the FDISK menu. Your screen will look similar to Figure 13-3.

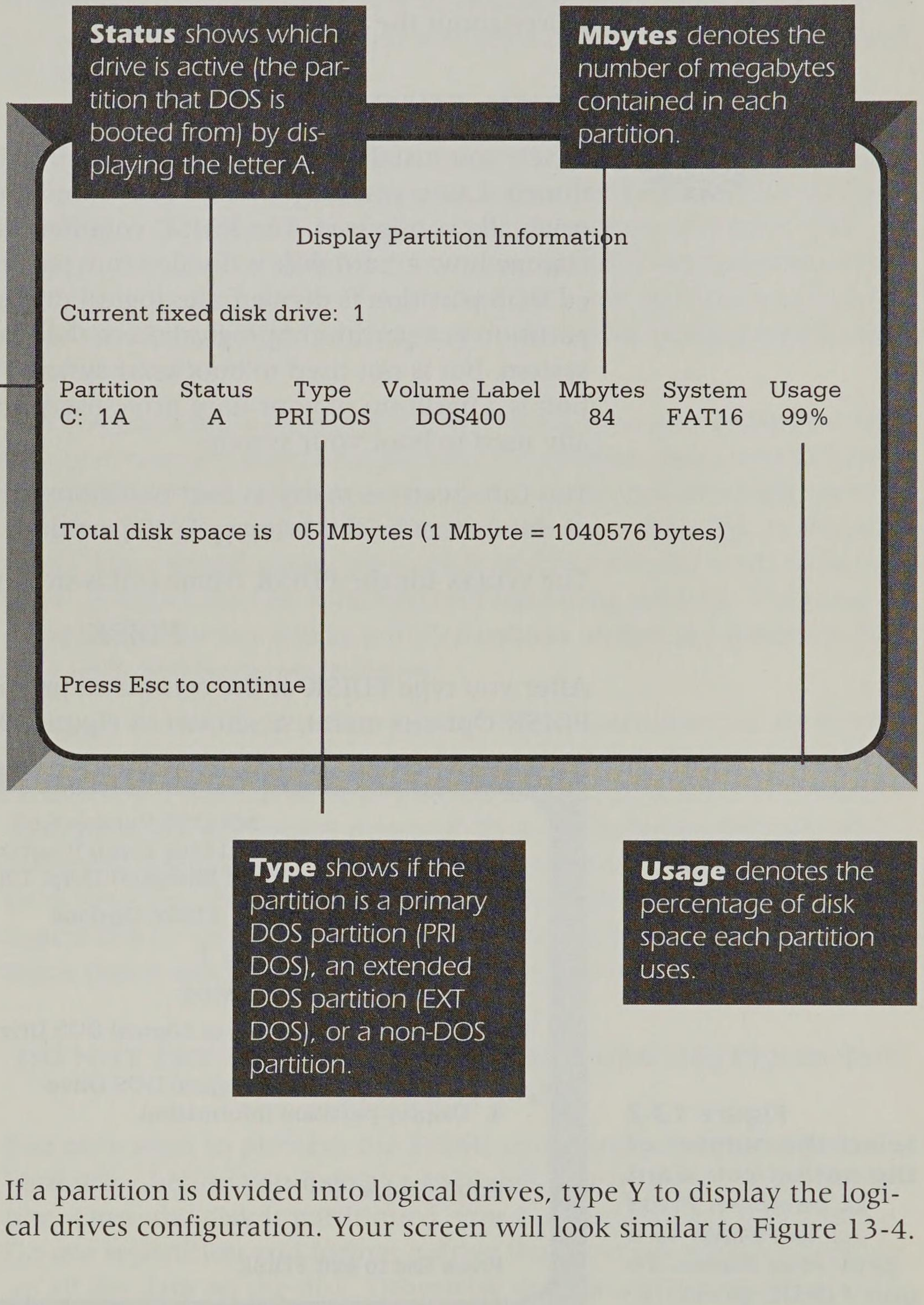


Figure 13-3
Display partition information

If a partition is divided into logical drives, type Y to display the logical drives configuration. Your screen will look similar to Figure 13-4.

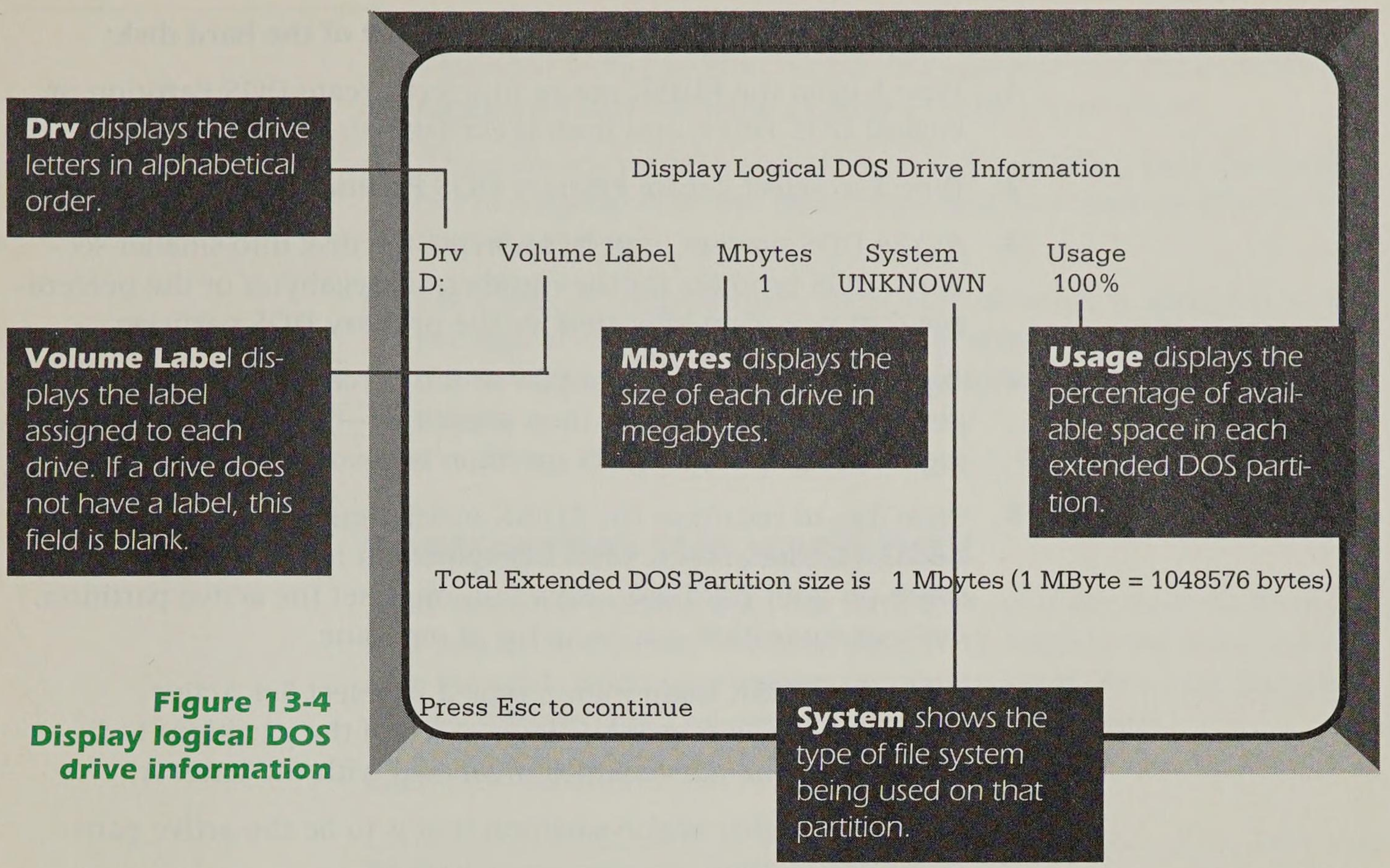


Figure 13-4
Display logical DOS drive information

CREATING A PRIMARY DOS PARTITION

Your hard disk must contain a primary DOS partition. It is the partition that DOS boots from. It must be the first hard drive of your system if there is more than one. The primary DOS partition can occupy the entire disk or only part of it. If your system already contains a primary DOS partition, you must delete it before creating a new one. (See the section "Deleting a partition or logical drive.")

To create a primary DOS partition for the entire hard disk:

1. Type **1** from the FDISK menu to select Create DOS Partition or Logical DOS Drive, and then press Enter↵.
2. Type **1** to select Create Primary DOS Partition. DOS displays a prompt where you choose whether to use the entire disk for the primary DOS partition and make it the active one.
3. Type **Y** to use the entire hard drive for the primary DOS partition. DOS displays a message to insert the system disk in drive A.
4. Insert the Install disk in drive A, and then press any key. Now you are ready to format your hard disk using the FORMAT /S command.

To create a primary DOS partition for a part of the hard disk:

1. Type **1** from the FDISK menu to select Create DOS Partition or Logical DOS Drive, and then press Enter.
2. Type **1** to select Create Primary DOS Partition.
3. At the DOS prompt, type **N** to divide the disk into smaller sections. DOS prompts for the number of megabytes or the percentage that you want allocated for the primary DOS partition.
4. Type the number of megabytes or the percentage, followed by a percent symbol (%), and then press Enter. DOS displays a message that the primary DOS partition is created.
5. Press Esc to return to the FDISK main menu. Later you will need to create an extended DOS partition for the remaining space on your hard disk. Now you must set the active partition. Only one partition can be active at one time.
6. From the FDISK main menu, type **2** to select Set Active Partition, and then press Enter. A list of the partitions is displayed with the active partition labeled with the letter A.
7. Type the number of the partition that is to be the active partition.
8. Press Esc to return to the main menu.

CREATING AN EXTENDED DOS PARTITION

If the primary DOS partition does not occupy the entire hard disk, you need to create an extended DOS partition for the remaining disk space. The extended DOS partition can be further divided into logical drives. You can define up to 23 logical drives; however, an extended partition must contain at least one logical drive.

To create an extended DOS partition:

1. Type **1** to select Create DOS Partition or Logical Drive, and then press Enter.
2. Type **2** to select Create Extended DOS Partition, and then press Enter. DOS displays the remaining number of megabytes that are available for the extended DOS partition.
3. To accept the default, press Enter. Otherwise, type the number of megabytes or the percentage, followed by a percent symbol (%), of the remaining space to be used for the extended partition.

4. Press Esc. DOS displays the Create Logical Drive(s) in the Extended DOS Partition menu. DOS prompts for the number of megabytes that are to be allocated to the logical drive.

5. If you do not want to accept the default (100%), type the number of megabytes or the percentage that you want to allocate for the logical drive.

6. Press Enter↵. Repeat these steps until all space is allocated to all the logical drives. DOS automatically returns to the FDISK main menu when all the extended DOS partition is assigned to logical drives.

FORMATTING THE HARD DISK

After you have partitioned your hard disk, you are ready to format it. If you do not format the hard disk, DOS displays the error message "Invalid media type" when you try to use it. You may consider adding volume labels to each drive during this process.

Each new partition must be formatted separately.

To format the primary DOS partition:

1. Type **FORMAT C: /S**.

   This transfers the system files to this partition.

To format logical drive D:

1. Type **FORMAT D**.

Continue formatting each of the remaining logical drives using the appropriate drive letter. Remember, you will want to back up a disk that already contains data before reconfiguring and formatting it.

DELETING A PARTITION OR LOGICAL DRIVE

Once a partition has been created, you cannot change its size. To change a partition, you must first delete it and then recreate it. Before you delete a partition, make backup copies of any information you want saved. Once a partition is deleted, the data in that partition is also deleted. You cannot recover it. When you delete one partition, data stored in other partitions is not affected. You cannot delete the primary DOS partition unless you first delete all extended DOS partitions. Likewise, you cannot delete an extended partition until all the logical drives it contains are deleted.

When you delete a logical drive that uses a drive letter less than those of the other logical drives contained in the extended partition, the remaining logical drive letters will change. For example, if you delete drive D and the disk contains drive E and drive F, DOS changes drive E to D and drive F to E.

To delete a partition or logical drive:

1. From the FDISK main menu, type **3** to select Delete DOS Partition or Logical Drive, and then press Enter↵.
2. From the menu, you can type **1** to select Delete Primary DOS Partition, type **2** to select Delete Extended DOS Partition, type **3** to select Delete Logical Drive(s) in the Extended DOS Partition, or type **4** to select Delete Non-DOS Partition. The screen displays the status of the partition or logical drive and a message that warns that the data will be lost.
3. Type the partition number or logical drive letter that you want to delete, and then press Enter↵. If you are deleting a logical drive, you must also include the volume label as a safeguard to delete the correct logical drive. DOS displays a screen confirming the information you entered.
4. Type **Y** and then press Enter↵ to delete the partition or drive.
5. Press Esc return to the FDISK main menu. When you exit the main menu, DOS will restart the system.

USING RECOVER

If you have a problem reading a disk, then it is probably damaged. DOS displays a message that it cannot read the disk or that the disk contains a bad sector. If you encounter a file that DOS cannot access, then at least part of the file is probably located in a defective area of the disk. In either case, you can try to recover as much data as possible using the RECOVER command. Files can be recovered only on the disk where they are located.

RECOVER COMMAND SYNTAX

The RECOVER command recovers files from a bad or defective disk. It reads a file sector by sector and recovers readable data by combining it into one file. The part of the file that is located in the bad sector is unrecoverable.

The syntax for the RECOVER command is:

[drive:][path]filename specifies the location and name of the file you want to recover. This format is used for recovering a single file. You cannot use wildcards to specify a file or drive.

drive: specifies the drive from which you want to recover all files. This format is used when the entire disk is damaged.

```
RECOVER [drive:][path]filename
RECOVER drive:
```

NOTE: RECOVER cannot recover files on a network drive or on drives created with the ASSIGN, JOIN, or SUBST command.

You can use the RECOVER command to try to salvage a single file. For example, you might encounter an error message when trying to access the file REPORT on drive A. You can try to recover the data in the file by typing RECOVER A:REPORT. DOS creates the file FILE0001.REC in the root directory on drive A. Data stored in bad sectors are removed from the file. You need to edit the file and reenter any missing data that was stored in the bad sector.

You can use RECOVER to recover all files on a bad disk. For example, if you have a disk error in drive A and the disk is unusable, you will want to recover all the files on the disk. Type RECOVER A:. DOS begins to recover the first file and creates file FILE0001.REC in the root directory on the disk in drive A. As each file is recovered, a new file is created with the number in the filename increasing by one. The root directory holds as many files as can fit. The drawback with RECOVERY is that once the root directory reaches its limit (112 files on a 360K disk), DOS stops the recovery process. When the disk contains many files, it may be safer to recover them file by file.

USING REPLACE

There may be times when you want the same files in more than one directory. For example, one directory may contain backups of all the files located in another directory. Another example is when your system is not part of a network and two or more users want to work with the same files on their own hard disks. Use the REPLACE command to make sure that each disk contains the latest version of all the files.

REPLACE COMMAND SYNTAX

The REPLACE command replaces all the files on one disk (target disk) with the files from another disk (source disk).

The syntax for the REPLACE command is:

[drive1:][path1]filename specifies the location and name of the source file or group of files.

[drive2:][path2]filename specifies the location of the target file. If a drive or directory is not specified, REPLACE uses the current drive and directory for the destination.

/r replaces read-only files as well as unprotected files.

/s searches all subdirectories of the target directory and replaces matching files. This switch cannot be combined with the /a switch.

REPLACE[drive1:][path1]filename[drive2:][path2][/a][/p][/r][/s][/w][/u]

/a adds only the files from the source location that are not already on the target drive. Files located in the source and target locations are not changed.

/p prompts you to confirm each file before replacing the target file or adding a source file.

/w prompts and waits for you to insert a disk into the drive before continuing with the command.

/u replaces only existing files in the target location that are older than the files in the source location. By using this switch, you eliminate replacing files that have not changed.

You can update files on a backup disk with the REPLACE command, using the /u switch. For example, if you regularly back up the files in the FINANCE directory on drive C to a floppy disk in drive A, type **REPLACE C:\FINANCE A: /U** to update the backup copy. Files on drive A that have dates older than files on drive C are replaced with files from drive C. The /u switch does not add any new files to the floppy disk.

The REPLACE command also allows you to add new files to a target location by using the /a switch. To continue with the previous example, you can add only new files on drive C that do not exist yet on the backup disk in drive A by typing **REPLACE C:\FINANCE A: /A**.

When you want the option to replace or omit a file during the REPLACE procedure, use the /p switch. Using the previous example again, you can have DOS prompt you for each file by typing

REPLACE C:\FINANCE A: /P. You can type **Y** to replace this file or **N** to skip replacing this file and display the next file.

If you want to update a single file in several locations, you can use the /s switch. For example, if three directories contain the same client name and address file, you can update each copy with the latest version by typing **REPLACE A:\ADDRESS.TXT C:\ /S**. This command replaces the file ADDRESS.TXT in each of the directories on drive C with the file ADDRESS.TXT from the floppy disk.

USING SYS

Earlier in this book, you learned to create a system disk during formatting by using the /s switch of the FORMAT command. You typed FORMAT A: /S to format a disk in drive A and then add the system files to the disk.

You can also create a system disk using a formatted disk with the SYS command. This command transfers the system files necessary to make the disk a system disk. The files transferred may vary depending on whether you are using MS-DOS or PC-DOS. You need to use the same release of DOS for formatting the disk and the SYS command, or you could encounter a problem.

SYS COMMAND SYNTAX

The SYS command copies the two DOS system files, IO.SYS and MSDOS.SYS, and the DOS command interpreter, COMMAND.COM, to a formatted disk. The first two files are hidden files and are copied first.

The syntax for the SYS command is:

[drive1:][path] specifies the location of the system files. If a path is not specified, DOS searches the root directory on the current drive for the system files.

drive2: specifies the drive where you want to copy the system files. They can be copied only to a root directory, not to a subdirectory.

```
SYS [drive1:][path]drive2:
```

You cannot use the SYS command on drives that have been redirected using the ASSIGN, JOIN, or SUBST command. SYS also does not work on network drives.

You can add system files to a program disk for another application. For example, if you have a two-floppy-disk system, you must boot the system from a System disk in drive A. Then, if you want to run a program, you must replace the System disk with the program disk. To eliminate this disk swapping, you can add the system files to your program disk. Then you can boot the system and run your program using the same disk.

To add the system files to a formatted disk:

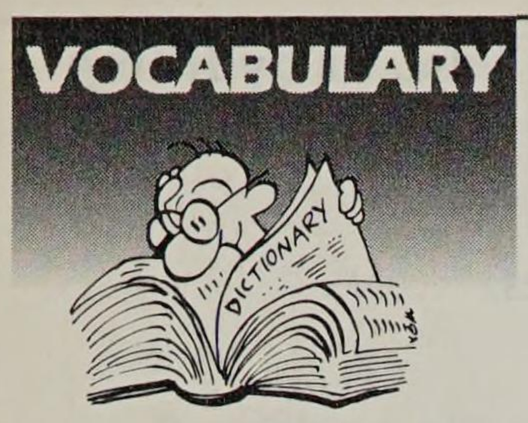
1. Place the System disk in drive A and the program disk in drive B.
2. Type **SYS A: B:**.

   The system files are copied from the System disk in drive A to the program disk in drive B.

If you want to back up your system files that are on your hard disk to a floppy disk:

1. Type **SYS A:**.

   The system files are copied from the root directory of the current drive to a disk in drive A.



Data file

Any file that does not contain a program instruction.

Extended DOS partition

The disk area that is not part of the primary partition.

Logical drive

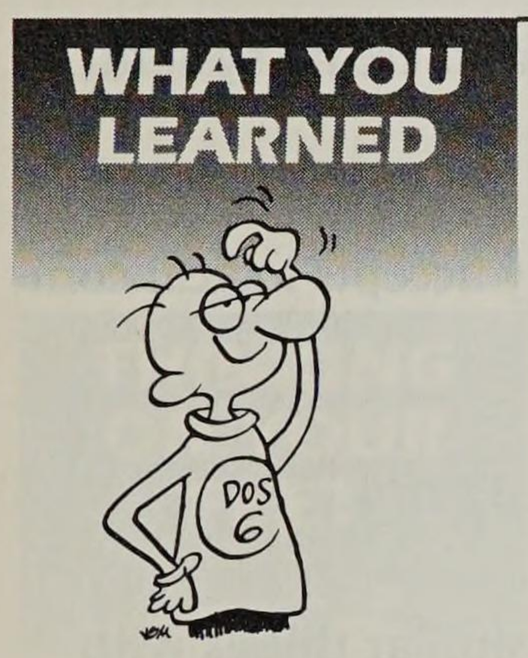
An area of an extended DOS partition that is represented by a different drive letter. For example, drive D and drive E are logical drives of drive C. DOS treats a logical drive as a separate physical drive.

Partition

A physical division on a hard disk that can be used as a different logical drive or for a different operating system.

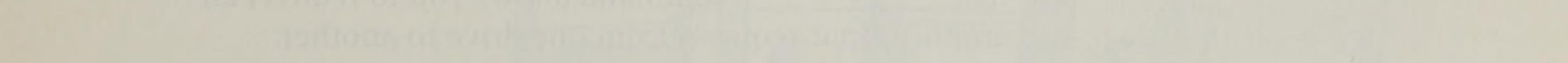
Primary DOS partition

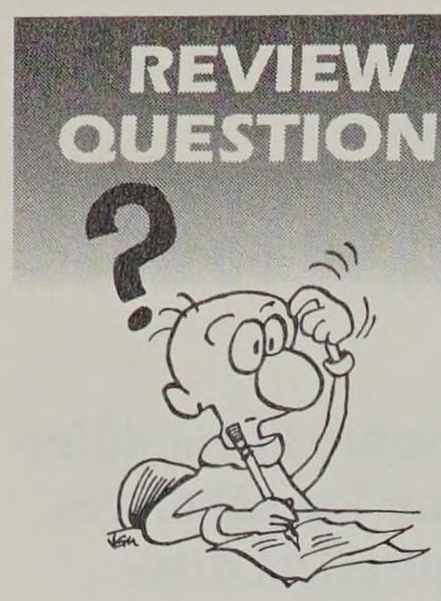
The partition that DOS boots from and is located on the first hard drive if a system contains more than one hard drive.



In this chapter you have learned about some advanced DOS commands. Some of the things you have learned are:

- How to make DOS search for data files in several directories.
- How to assign one or more drives to a single drive letter.
- How to view or change hard disk partitions.
- How you can recover files from a disk with bad sectors.
- How you can replace files on one disk with files from another disk.
- How to transfer the system files to a formatted disk.





Answer each of the following with *true* or *false*, or by filling in the blank.

1. The APPEND command combines two files.

2. The _____ command lets you look for a file on drive C, which is actually located on drive A, and access it.

3. The _____ command divides a disk into partitions.

4. The RECOVER command can rescue a data on a disk that was left near a magnet.

5. The REPLACE command automatically ensures that your files are up to date.

6. The SYS command lets you format a disk and create system disk that can be used to boot your system.

7. A logical disk drive is a disk drive that only accepts logical commands.

8. The largest size for a hard disk partition is 32 MB.

9. The APPEND and the PATH statement do similar things with different files.

10. You can create several logical drives on one hard disk drive.

11. The _____ command allows you to establish a search path for data files.

12. The _____ command allows you to redirect all input/output requests from one drive to another.

13. The _____ command allows you to repartition your hard disk.

14. The _____ _____ _____ is the area DOS boots from on a hard disk.

15. A _____ _____ is located in the extended DOS partition.

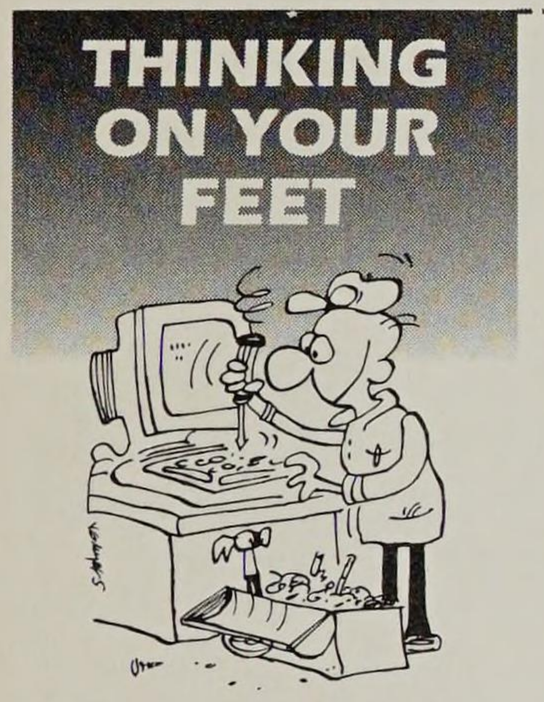
16. FDISK must be performed before or after you format the hard disk?

17. A hard drive can contain up to _____ partitions and up to _____ logical drives.

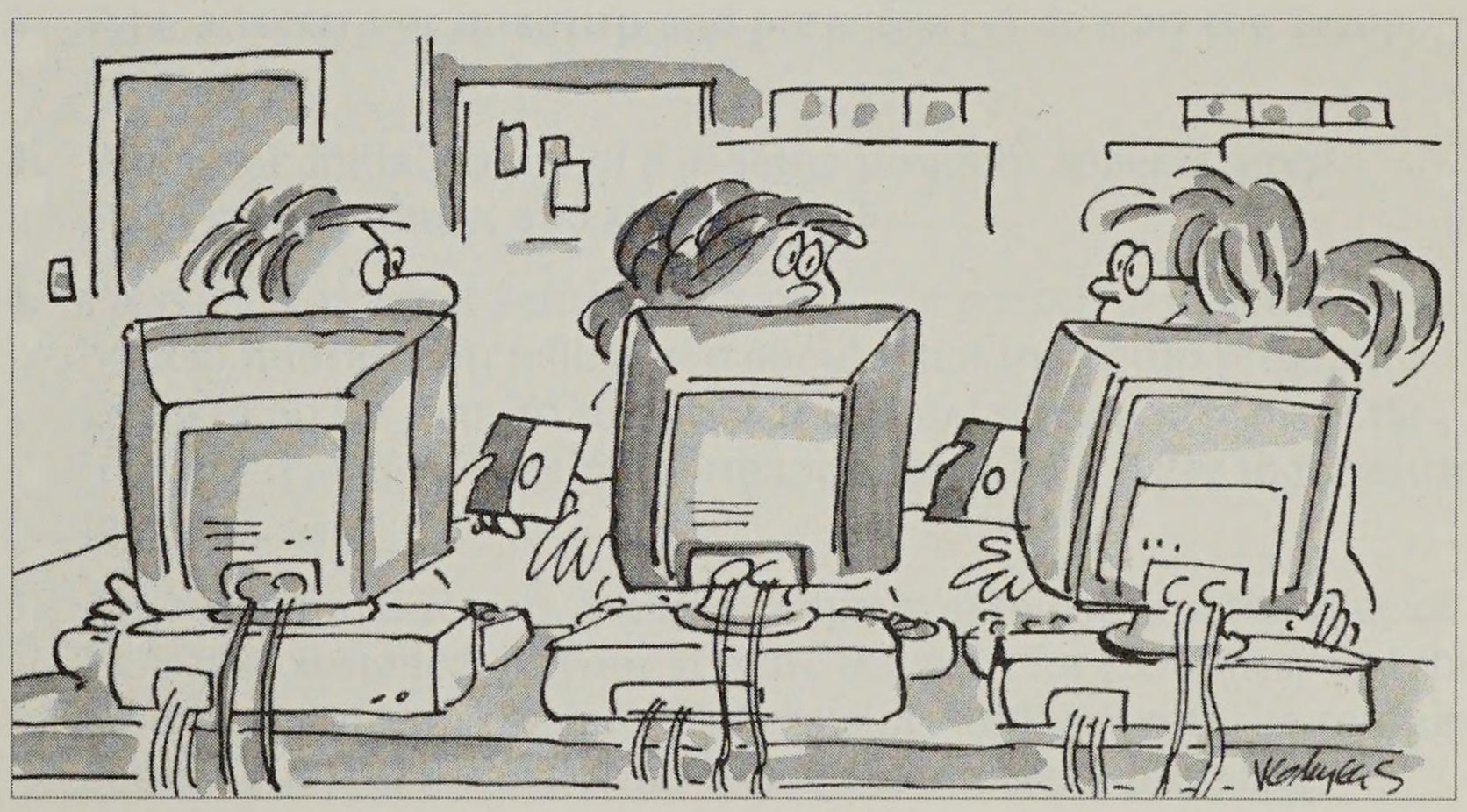
18. The _____ command adds the system files to a formatted disk.

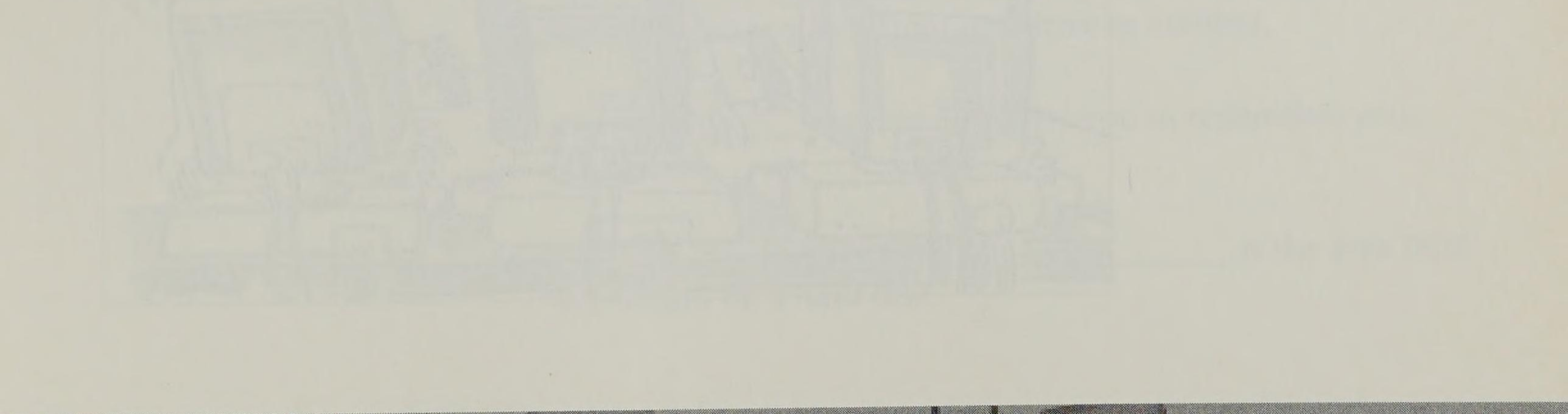
19. The _____ command tries to salvage data on a defective disk.

20. The _____ command replaces one or all files from one directory to another.



In your office, there are three computers, which are not linked in a network. You have several files that everyone uses, and that periodically need to be updated on all three computers. Explain how you could quickly replace the updated files. Explain how you would help your co-worker, who had vital files stored on a floppy disk that developed a bad sector. Explain how you could easily run your scheduling program, which only recognizes drives A and B.





Appendix A
Installing MS-DOS 6

Before you can use your new computer, MS-DOS must be installed. Installing DOS means using the DOS Setup program to take the compressed files from the program's floppy disks, and copy them in an uncompressed format to your hard drive. At the same time, DOS configures your hard drive to use MS-DOS's new features.

The following steps assume that you have a previous version of DOS installed already, and you are upgrading to version 6. If you are installing DOS for the first time on your hard drive; either because it is brand new, or because you have been using a different operating system, such as OS/2, consult your DOS manual for complete instructions.

Before you install MS-DOS 6 on your system, you need to do three things. First, locate a blank disk that can be used in drive A and label it Uninstall #1. If your drive A only uses 360 KB disks, you need two disks, labeled Uninstall #1 and Uninstall #2. Second, unload or disable any automatic message service. Third, unload or disable disk-caching, delete-protection, and anti-virus programs.

If you are unsure what "automatic message services", "disk-caching", "delete-protection", and "anti-virus programs" are, first check the documentation of all programs currently installed on your computer. Alternatively, ask the person who installed the programs on your computer.

To install MS-DOS 6:

1. Turn your computer on, and put Setup Disk #1 in a floppy disk drive.
2. Type **a:\setup** or **b:\setup** and press Enter↵, to start the Setup program.
3. When the initial screen of the Setup program appears, press Enter↵ to continue, and skip to step 5.
4. Press F3 to cancel Setup at this point, or press F1 to see a screen of help information telling you about what the Setup program is going to do for you. To return to the initial screen after pressing F1 and reading the help information, press Esc. After that, return to step 3.
5. After the initial screen, Setup prompts you to confirm the type of DOS now installed on your system, the path for DOS files, and the type of monitor or display you are using, and presents the settings Setup detected. If the default settings are correct, press Enter↵, and skip to step 9.

6. If the displayed settings are incorrect, use ↑ or ↓ to highlight that setting, and press Enter↵ to display the available options.

7. Use ↑ or ↓ to highlight the correct option, and press Enter↵.

8. After correcting the settings, press Enter↵ with no settings highlighted.

9. Next, Setup displays three programs that you might want to install, Backup, Undelete, and Anti-Virus, and prompts you for how you want to install them. You can install these programs for DOS only, DOS and Windows, Windows only, or not at all. You cannot install these programs for Windows if you do not have Windows on your computer. Setup indicates that all of these files will be installed; for DOS only if you do not have Windows, or for Windows only if you do. If the given settings are appropriate, press Enter↵ and skip to step 11.

10. To change these settings if they are inappropriate, use ↑ or ↓ to highlight the program, press Enter↵, highlight the appropriate option, and press Enter↵ again. When finished, press Enter↵ with no programs highlighted to continue with setup.

11. If Setup found Windows on your system, it prompts you to confirm the Windows directory by prompting you with the directory it detected. Press Enter↵ to confirm that the displayed directory is correct, or type the correct directory and press Enter↵.

12. Setup displays the message that it is ready to upgrade MS-DOS. Press **Y** to upgrade now or F3 to exit Setup and return to the DOS prompt.

13. As Setup installs DOS, you need to remove or insert the disks in the default disk drive. Setup prompts you when it needs the Install or Uninstall disks. Simply remove the disk currently in the drive, insert the disk you are prompted for, and press Enter↵ to continue with Setup.

14. When Setup finishes installing DOS, it displays a message telling you it is done. Remove all disks from the floppy disk drives, and press Enter↵. Setup then reboots your system using the new MS-DOS.

When you install DOS 6, some of your old DOS files are copied to the Uninstall disk, while others are transferred to a new directory called OLDDOS.x. If you need to, you can use the OLDDOS.x directory and the Uninstall disk(s) to restore the earlier version of DOS. If you are sure you do not need to do this, you can delete the directory and reformat the disk.

Appendix B
Command Reference

APPEND — External

Covered on page 312

Use APPEND when you want DOS to search for data files not found in the current directory in other locations. APPEND adds the paths specified to the search path for files. When used without parameters or switches, APPEND displays the current search path for files.

SYNTAX

```
APPEND [/x:on|off] [/e]
APPEND ;
APPEND
APPEND [pathname1][;pathname2][;pathname3].[;pathnameN]
       [/x:on|off] [/path:on|off]
```

CUSTOMIZING

PARAMETERS

No parameter entry: Displays the current appended directory for data files.

;: Cancels any appended directory list previously added.

[pathname1][;pathname2]: Specifies pathnames to append to the current directory and searches this path for data files not in the current directory.

SWITCHES

/e: Assigns the appended directories to the environmental variable, APPEND.

/path:on|off: Determines whether DOS searches appended directories for data files. /path:on is the default.

/x:on|off: Determines whether DOS searches appended directories for executable files. /x:off is the default setting.

APPLICATION

If you are working with a program such as dBASE and want to be able to access files in C:\DBASE\EMPLOYEE and D:\PAYROLL in addition to the current directory you would enter the following:

```
APPEND C:\DBASE\EMPLOYEE;D:\PAYROLL
```

NOTE

Using APPEND with the /x:on switch is similar to using the PATH statement to specify other directories for program and batch files. The directories selected with APPEND are searched before the directories selected with the PATH command.

Avoid APPEND in specifying data directories for word processors. Since some word processors create new files rather than modifying the original, a file in an appended directory will have its new version written to the current directory even though the original copy of the file was in the appended directory. This can get confusing.

ASSIGN — External

Use ASSIGN when you want to refer to a drive with a different drive letter.

Covered on page 315

SYNTAX

ASSIGN [x=y][/status]

CUSTOMIZING

PARAMETERS

No parameter entry: Resets assigned drives to their original drive.

x: Specifies the drive to reassign to another drive. The drive letter does not need a colon after it.

y: Specifies the drive that the assigned drive letter will refer to. The drive letter does not need a colon after it.

SWITCH

/status: Displays the current assigned drives.

APPLICATION

If you are using a program that expects files on drive A that you have stored on drive C, you would enter this command:

ASSIGN A=C

NOTE

ASSIGN should not be used to assign the letter of the drive where DOS has COMMAND.COM stored. Avoid the use of the ASSIGN command with the BACKUP, DISKCOPY, FORMAT, JOIN, LABEL, PRINT, RESTORE, and SUBST. SUBST is usually a better command to use since you can assign the drive to another drive and directory. You cannot assign a drive while another program is using it.

ATTRIB — External

Use ATTRIB to display or change the attributes assigned to files.

Covered on page 142

SYNTAX

ATTRIB [+r|-r] [+a|-a] [+s|-s] [+h|-h] [pathname] [/s]

CUSTOMIZING

PARAMETERS

No parameter entry: Displays the attributes of all files in the current directory.

pathname: Specifies the files to list or change the attributes.

SWITCHES

+r|-r: Adds or removes a read-only attribute from the selected files.

+a|-a: Adds or removes an archive attribute from the selected files. Commands such as BACKUP, RESTORE, and XCOPY use this attribute to determine which files to use. An archive attribute is also added when you modify the file.

+s|-s: Adds or removes a system attribute from the selected files.

+h|-h: Adds or removes a hidden attribute from the selected files. Hidden files do not appear in file lists such as with the DIR command.

/s: Tells DOS to use all directories on the current drive for this command.

APPLICATION

You can use this command to change attributes of files such as making files read-only so you do not accidentally delete them. To do this for your .EXE files, you would enter:

```
ATTRIB +R *.EXE
```

BACKUP External

BACKUP creates a special backup copy of one or more files to other disks. Unlike DISKCOPY, the source and destination disks do not have to be the same size.

SYNTAX

```
BACKUP pathname1 pathname2 [/s][/m][/a][/f:size][/d:date][/t:time]
       [/l[:pathname]]
```

CUSTOMIZING

PARAMETERS

pathname1: Specifies the source of the files you want to backup. It can be as simple as a drive as in C:, include a specific directory as in C:\PROGS, or select specific files C:\PROGS*.EXE.

pathname2: Specifies the destination where you want the source files backed up. You can specify a drive as in C: or include a specific directory as in C:\PROGS.

SWITCHES

/s: Backs up the subdirectories of the source path as well as the files in the source directory.

/m: Backs up files that have been modified since the last BACKUP command. Using this switch removes the archive attribute from any backed up files so the next time this switch is used, only the files with an archive attribute are backed up.

/a: Add the current backup to the end of another backup so the new backup is tacked on to the end of the old one.

/f:size: Format the disk before starting the backup. The size must indicate whether you are using a 160K, 180K, 320K, 360K, 720K, 1.2 MB, 1.44 MB, or 2.88 MB disk. You can enter the number of kilobytes, number of kilobytes followed by a K or KB, the number of megabytes (1.2, 1.44 or 2.88) or the number of megabytes followed by an M or MB.

/d:date: Back up files with a date on or after the specified date. The format of the date is the same as the format of the date used by the DATE command.

/t:time: Back up files with a time on or after the specified time. The format of the time is the same as the format of the time used by the TIME command.

/l:pathname: Create a log file listing the files that were placed on the backup disk. If you do not provide a pathname, the file called BACKUP.LOG is placed in the root directory of the current disk.

APPLICATION

This command is frequently used to backup a hard drive onto several floppies. You can restore the files on the backup to the hard disk in the event of accidental deletion or a need to replace your hard disk. To create a backup you might enter the command:

BACKUP C: A: /S /M /L

This command creates a backup of all of the files on drive C. This backup includes the files stored in subdirectories since the /s switch is used. DOS creates a file called C:\BACKUP.LOG that lists the files it backs up and the disk they are on. The /m switch removes the archive attribute from the files that are backed up. When you want to backup the newer files, enter the same command again and only the files that have changed since the last backup are copied to the floppy disks.

NOTE

The files on the backup disks are in a format that cannot be accessed with the COPY command.

BREAK — Internal

Covered on page 265

Typically BREAK is used in CONFIG.SYS to specify when DOS checks to see if Ctrl-C has been pressed. Ctrl-C is used to halt a DOS command. DOS automatically checks for Ctrl-C when DOS is exchanging information with the keyboard, printer or screen.

SYNTAX

BREAK [on|off]

CUSTOMIZING

PARAMETERS

No parameter entry: Displays the current BREAK setting.

on|off: Turns additional Ctrl-C checking on or off. When additional Ctrl-C checking is on, DOS also checks for Ctrl-C when DOS reads or writes to the disk. The default is to not perform the additional Ctrl-C checking.

APPLICATION

To have DOS check for Ctrl-C when it reads and writes to a disk, enter the command BREAK ON to turn the additional checking on. You can enter BREAK OFF to return to the default and check for Ctrl-C when DOS performs reads or writes to the keyboard, printer or screen.

NOTE

You can also set DOS to perform additional CTRL-C checking in the CONFIG.SYS file by entering the command:

```
BREAK=ON
```

BUFFERS — CONFIG.SYS only

Covered on page 265

BUFFERS allocates space for DOS to use as buffers to speed up file input/output. Buffers are used to temporarily store information that has been read from a file or will be written to a file. By increasing the number of buffers you increase the execution speed but decrease the memory available for programs.

SYNTAX

```
BUFFERS=m[,n]
```

CUSTOMIZING

PARAMETERS

m: Specifies a number between 1 and 99 for the number of buffers. Each buffer uses 532 bytes.

n: Specifies the number of buffers in a secondary cache. The default is 1.

APPLICATION

To increase the number of buffers to twenty, you would enter this command in your CONFIG.SYS file:

```
BUFFERS=20
```

CHDIR or CD — Internal

Covered on page 110

Use CD or CHDIR to display or change the current directory.

SYNTAX

CHDIR [pathname]
CD [pathname]

CUSTOMIZING

PARAMETERS

No parameter entry: Displays the current path.

pathname: Specifies the directory you want to make current. Use to change to the directory one level above the current directory in the directory tree structure. This directory is called the parent directory. If you use \, the root directory on the current drive is activated.

APPLICATION

Use CD any time you want to change the active directory. You might want to change the directory to execute a program stored in another directory or to perform actions on files in another directory without having to enter the full pathname each time. To activate the \DBASE\CLIENT directory on the current drive type:

```
CD \DBASE\CLIENT
```

CHKDSK — External

Covered on page 61

CHKDSK displays a status report on a disk and conventional RAM, and checks the disk for logical errors in file allocation and directories. Logical errors include unused allocation units that are not included in the file allocation table as available for use, file sizes in the file allocation table that do not match the size of the file on the disk, and multiple files using the same allocation unit.

SYNTAX

CHKDSK [pathname] [/f] [/v]

CUSTOMIZING

PARAMETERS

pathname: Specifies the drive or file to check for logical errors and report on. If you provide a drive, this command checks all files for logical errors and only reports the ones found. If you provide a file or files using the ? and * characters, this command reports logical errors for the files and lists which files are fragmented; stored in non-contiguous blocks on the disk.

SWITCHES

/f: Fixes reported logical errors.

/v: Displays the names of the files as they are command checked for logical errors.

APPLICATION

Use CHKDSK when you want a status report showing the volume label, the date and time the disk was last formatted, its serial number, the disk size, disk space used by your files, disk space used by hidden files, disk space used by use files, disk space used by bad sectors, the allocation unit size, the number of allocation units on the disk, the available allocation units for new files, the amount of conventional RAM, and the available conventional RAM. To see this information for the disk in drive A, enter:

CHKDSK A:

CLS — Internal

Use CLS to erase all the information from the screen.

Covered on page 34

SYNTAX

CLS

CUSTOMIZING

No parameters or switches are used with this command.

APPLICATION

Type **CLS** and press Enter↵ to clear the error messages displayed after several erroneous attempts at entering a DOS command. You can use CLS in a batch file that presents a menu to insure that it begins at the top of your screen.

NOTE

When DOSKEY is enabled, the DOS commands you enter at the DOS prompt are recorded for later use. CLS does not clear this history. The commands are still available even though they do not appear on your screen.

COMP — External

Covered on page 129

COMP compares two files and reports the differences. Use the COMP command when you want to compare only a few files on a disk or when the files were not copied to the disk with DISKCOPY. Files copied without DISKCOPY may be stored in different locations on each disk causing an error indication with DISKCOMP but not with COMP.

SYNTAX

COMP [pathname1] [pathname2] [/a] [/d] [/l] [/n:number] [/c]

CUSTOMIZING

PARAMETERS

pathname1: Specifies the first file to be compared. You can use * and ? to specify the filenames or provide only the path information to compare all of the files in the path.

pathname2: Specifies the second file to be compared. You can use * and ? to specify the filenames or provide only the path information to compare the files in the path that have the same name as the files that are specified with pathname1.

SWITCHES

/a: Displays the differences between the files in ASCII format.

/d: Displays the differences between the files in decimal format.

/c: Causes COMP to ignore differences caused by letters being in a different case.

/l: Displays the line number containing the difference rather than the offset.

/n:number: Sets the number of lines from each file that COMP compares starting at the beginning.

APPLICATION

This command is used to compare two files. This command does a binary comparison that does not resynchronize files the way the FC command does. This command is useful when you want to compare non-text files such as checking that the .EXE files on a floppy match the .EXE files on your hard disk. To compare two files such as PROGRAM.EXE on the current drive and the same file on drive A, enter:

```
COMP PROGRAM.EXE A:
```

COPY — Internal

Covered on page 124

Use COPY to copy files or combine several files into one.

SYNTAX

```
COPY [pathname1] [pathname2] [/v] [/a] [/b]
COPY [pathname1] [/v] [/a] [/b] [pathname2]
COPY pathname1+pathname2[+...] pathnameN
```

CUSTOMIZING

PARAMETERS

pathname1: Specifies the file or files to copy. Unless you include different information, DOS assumes the files are in the current drive and directory.

pathname2: Specifies the destination of the files that are copied. This can include a drive, path information or even new file names if you want the new copy to use different filenames. If you omit this information, DOS tries copying the files to the current drive and directory using the same filenames. When you append files, join pathname2 to pathname1 with a plus sign. Other files to be combined are also joined with plus signs.

pathnameN: Specifies the destination file that will contain the combined files. If this information is omitted, DOS tries copying the files to the cur-

rent drive and directory using the first filename provided.

SWITCHES

/v: Checks each file after it is copied.

/a: Copies files until the end of file character (CTRL-Z) when this switch is put before pathname2. This is the default when you use the COPY command to combine files.

/b: Copies files until the number of bytes determined by the files' sizes are copied. When this switch is put after pathname2, DOS does not add an end of file character. This is the default when you use the COPY command without combining files.

APPLICATION

COPY is used to make a copy of files, send files to devices and combine files. To copy a file such as MY_DATA.TXT to another drive, you would enter:

```
COPY MY_DATA.TXT A:
```

This entry copies the file MY_DATA.TXT in the current directory to drive A. Since a filename was not included after A:, DOS uses the same filename for the copy. When you copy files, all attributes are copied as well. You can use wildcards to select groups of files as in:

```
COPY C*.* A:D*.*
```

This example copies all files that start with the letter C to drive A and changes the initial C to a D. You can also use a device as the source or destination. For the source, you may want to use CON so you can enter text into a file as in typing:

```
COPY CON JUNK.TXT
This is my file ^Z
```

The ^Z ends the file when you press Enter↵. You can enter ^Z by pressing Ctrl-Z or F6. You can also use a device with the COPY command as the destination, as in:

```
COPY JUNK.TXT LPT1
```

This copies the contents of JUNK.TXT to the printer connected to the first parallel port. The last use of the COPY command is joining files as in:

```
COPY JUNK.TXT+JUNK2.DAT+JUNK3 ALL_JUNK
```

This example joins the contents of JUNK.TXT, JUNK2.DAT, and JUNK3 and stores the combined file in the ALL_JUNK file.

NOTE

If you forget the colon in this command as in COPY *.* A where you want to copy files to drive A, all of the files are copied to a file called A.

COUNTRY — CONFIG.SYS only

Covered on page 266

Use COUNTRY to set the country for DOS affecting the date and time formats, case conversions, currency, sorting, folding formats and decimal separators. The United States is the default if this command is not used. You select a country during DOS 6 installation, so this command was entered for you. You only need to use this command if the original setting is not appropriate.

SYNTAX

COUNTRY=xxx[,yyy][,pathname]

CUSTOMIZING

PARAMETERS

xxx: Specifies the country code for the country to use.

yyy: Specifies the code page to use with the country settings.

pathname: Specifies the file containing the information for the different countries. This is normally C:\DOS\COUNTRY.SYS. If the pathname is not provided, DOS tries using COUNTRY.SYS in the startup directory.

APPLICATION

If you wanted to change the country code to another country, such as Germany, you would enter this command in your CONFIG.SYS file:

COUNTRY=049,,C:\DOS\COUNTRY.SYS

After entering this command, the date would appear as 30.12.1990 for December 12, 1990 and the time would appear as 16.37.00,00 for 4:37 in the afternoon.

NOTE

The country code affects the DATE, MSBACKUP, MSRESTORE and TIME commands. The DATE and TIME will require new entries to use the date and time formats of the newly selected country code. BACKUP and RESTORE use the date and time to determine which files are backed up and restored.

DATE — Internal

Covered on page 275

DATE displays or sets the current date in your computer system. You can accept this date if you press ENTER. You can type a new date first to change the setting in your computer.

SYNTAX

DATE [date]

CUSTOMIZING

No parameter entry: Displays the current date and prompts for the new

date. Accept the date displayed by pressing ENTER or enter a new date using a mm-dd-yy or mm/dd/yy format.

date: Sets the system date to the date you supply, assuming the date is a proper format as described above.

APPLICATION

If you are using an older model PC your date is not automatically updated. All of your files will have the same date stamp unless you update the date each session. When you enter DATE you will see the following response:

```
Current date is Tue 01-01-1980
Enter new date (mm-dd-yy):
```

If the current date is June 20, 1993, you would type 6-20-93 and press Enter↵.

DBLSPACE External

Use DBLSPACE to compress data on disks to virtually double the storage capacity of disks or to change the configuration of a disk that you have already used DBLSPACE on. DBLSPACE can also convert a Stacker volume file into its own format.

SYNTAX

```
DBLSPACE
DBLSPACE /chkdsk /f [drive:]
DBLSPACE /compress drive1: [/newdrive=drive2:] [/reserve=size]
DBLSPACE /create drive1: [/newdrive=drive2:] [/size=size | /reserve=size]
DBLSPACE /defragment [drive:]
DBLSPACE /delete [drive:]
DBLSPACE /format [drive:]
DBLSPACE /info [drive:]
DBLSPACE |/list
DBLSPACE /mount[=nnn] drive1: [/newdrive=drive2:]
DBLSPACE /ratio=r.r [drive: |/all]
DBLSPACE /size[=size1 |/reserve=size2] drive:
DBLSPACE /unmount [drive:]
```

CUSTOMIZING

PARAMETERS

No parameter entry: Starts the menu-driven DoubleSpace utility that you can select from menus to change how the command performs.

drive: Specifies a drive other than the current one to use with the DBL-SPACE program.

drive1: Selects the disk to compress, where the Stacker volume is located, or where the compressed volume file is located.

SWITCHES

/all: Sets the compression ratio for all compressed drives rather than specifying a specific drive with the drive parameter.

/chkdsk: Checks for errors in a compressed disk

/compress: Compresses a hard disk

/defragment: Defragments a disk compressed with DoubleSpace. You can abbreviate /defragment as /def.

/delete: Deletes a compressed drive.

/f: Tells DBLSPACE to fix any errors DBLSPACE finds. Used with /CHKDSK/

/format: Formats a compressed drive.

/info: Returns information about a compressed drive.

/list: Lists information about most available drives.

/mount=nnn: Mounts the a DoubleSpace compressed volume file with the extension set by nnn that is on a floppy disk or has been previously unmounted. You can abbreviate /mount as /mo.

/newdrive=drive2: For /compress, /convstack, and /create, sets the disk letter of the compressed disk. Omitting this argument uses the next available drive letter. You can abbreviate /newdrive as /new (or /n when used with /create).

/ratio=r.r: Sets the compression ratio used to estimate available free space on a compressed disk to the ratio set with r.r. You can abbreviate /ratio as /ra.

/reserve=size: Sets the kilobyte size of the uncompressed disk. You can abbreviate /reserve as /res.

/size: Sets the size of a compressed drive set by the drive parameter. The size is either set by the number following the = or to the largest possible size leaving the amount set after /RESERVE as uncompressed. You can abbreviate /size as /si.

/unmount: Dismounts the compressed volume file that uses the drive set by drive

APPLICATION

If you want to use DoubleSpace to increase your disks storage capacity, enter DBLSPACE without any parameters so you can use the menu driven system to make your selections for how to you want DoubleSpace to work with disk storage.

DEFRAG — External

Use DEFRAG to reduce disk fragmentation to make your system work faster. Do not use this command while you are running Windows. For compressed disks, use DBLSPACE /DEFRAGMENT.

SYNTAX

DEFRAG [drive:] [/f] [/s[:]order] [/b] [/skiphigh] [/lcd|bw|g0] [/h]
DEFRAG [drive:] [/u] [/b] [/skiphigh] [/lcd|bw|g0] [/h]

CUSTOMIZING

PARAMETERS

drive: Selects the drive containing the disk to optimize.

SWITCHES

/f: Defragments files with no spaces between files.

/u: Defragments files leaving some empty space between files.

/s: Sorts the directories on the disk using the letter you put after the colon to determine the type of sort. N sorts directories in alphabetical order, E sorts directories in alphabetical order by the directory name's extension, D sorts the directories by their date and time of creation, S sorts the directories by their size. Adding a: after the N, E, D, or S reverses the order of the directories.

/b: Restarts your computer after files have been reorganized.

/skiphigh: Puts DEFRAG in conventional memory even if upper memory is available.

/lcd: Starts DEFRAG using an LCD color scheme.

/bw: Starts DEFRAG using a black and white color scheme.

/g0: Disables the graphic mouse and graphic character set.

/h: Moves hidden files during defragmentation.

APPLICATION

If you want to defragment the disk in drive A, you can enter a command like this:

DEFRAG a: /f /s:n

The DEFRAG utility will optimize how files are stored on your disk as well as putting the disk names in alphabetical order.

Covered on page 137

DEL or ERASE — Internal

Covered on page 137

DEL is used to remove files from a disk. DOS deletes files by changing the file entry in the file allocation table so the disk space the deleted file used is marked as available. DOS can then use that disk area to store other files.

SYNTAX

DEL pathname [/p]
ERASE pathname [/p]

CUSTOMIZING

PARAMETERS

pathname: Specifies the files to delete. You can use the * and ? wildcard characters to select groups of files to delete.

SWITCHES

/p: Prompts for confirmation to delete each file specified with pathname.

APPLICATION

Use this command to delete one or many files. You can use this command to delete one file as in:

```
DELETE BUDGET.DAT
```

You can also use DEL to delete many files as in:

```
DEL A:\*.* /p
```

This prompts for confirmation that you want to delete the files. Type a Y to delete the file. Using a prompt lets you select which files in the group you will delete. Also, when you delete all of the files in the directory DOS displays an additional prompt to confirm that you intend to delete all of them.

NOTE

You cannot delete hidden, system or read-only files.

DELTREE — External

Use the DELTREE command to delete a directory and its contents along with all its subdirectories and their contents. Once the directory is deleted, you cannot restore its contents.

SYNTAX

DELTREE [/y] path

CUSTOMIZING

PARAMETERS

path: Specifies the directory you want to delete.

SWITCHES

/y: Omits prompting you to confirm the deletion.

APPLICATIONS

You may want to delete a directory and all of its subdirectories from your disk quickly, for example, when removing a program. To delete your DBASE directory, its contents, all of its subdirectories and their contents, enter the following command.

```
DELTREE c:\dbase
```

DEVICE — CONFIG.SYS only

Covered on page 267

DEVICE loads a device driver into memory. Device drivers offer additional features such on-screen graphics.

SYNTAX

```
DEVICE=[drive:][path]filename [arguments]
```

CUSTOMIZING

PARAMETERS

drive: Specifies the drive containing the device driver to load.

path: Specifies the path containing the device driver to load.

filename: Specifies the name of the device driver.

arguments: Specifies arguments used by the device driver. These are unique for each device driver.

APPLICATION

To load the device driver RAMDRIVE to create a 128K virtual drive include this command in the CONFIG.SYS file:

```
DEVICE=C:\DOS\RAMDRIVE.SYS 128
```

The 128 is an argument that the RAMDRIVE.SYS device driver uses.

DEVICEHIGH — CONFIG.SYS only

Covered on page 269

DEVICEHIGH loads a device driver into reserved memory. Device drivers offer additional features including on-screen graphics, changing code pages, creating virtual drives, disk caching, and using additional hardware such as a mouse. Not all device drivers can be loaded in reserved memory.

SYNTAX

```
DEVICEHIGH=[drive:][path]filename [arguments]
DEVICEHIGH SIZE=hexsize [drive:][path]filename [arguments]
```

CUSTOMIZING

PARAMETERS

hexsize: Specifies the number of bytes in hexadecimal form that must be available in reserved memory before DOS loads the device driver into reserved memory. If available reserved memory is too small, DOS loads the device driver in conventional memory.

drive: Specifies the drive containing the device driver to load.

path: Specifies the path containing the device driver to load.

filename: Specifies the name of the device driver.

arguments: Specifies unique arguments for the device driver if needed.

APPLICATION

If you want to load the device driver RAMDRIVE to create a virtual drive in reserved memory and want this drive to be 128K, you would include this command in the CONFIG.SYS file:

```
DEVICEHIGH SIZE=28000 C:\DOS\RAMDRIVE.SYS 128
```

The SIZE argument prevents DOS from loading a device driver into reserved memory when there is not enough room. 128 is an argument that the RAMDRIVE.SYS device driver uses.

NOTE

Before you use the DEVICEHIGH command, your CONFIG.SYS file must include the DOS=UMB and DEVICE=EMM386.EXE commands.

DIR — Internal

Use DIR to list files in a disk directory or subdirectory.

Covered on page 57

SYNTAX

```
DIR [drive:][path][filename] [/p] [/w] [/a:attributes] [/o:sortorder] [/s]
    [/b] [/l] [/c[h]]
```

CUSTOMIZING

PARAMETERS

drive: Specifies a drive.

path: Specifies a directory.

filename: Specifies which files to list. You can include the * and ? wild-card characters. If you do not provide a filename, DOS uses a default of *.* which allows any filename and any extension. If you do not provide a file extension, DOS assumes use a default extension of an *. You can also type a period at the end to indicate that there is no extension.

SWITCHES

/p: Displays one screen of files at a time and pauses. You must press a key to see the next screen.

/w: Uses a wide display which displays only the filenames in five columns across the screen.

/a:attributes: Displays only files that match the selected attribute. Attributes must be blank for all files including hidden and system files, **h** for hidden files, **-h** for non-hidden files, **s** for system files, **-s** for non-system files, **d** for directories, **-d** for files without directories, **a** for files with the archive attribute, **-a** for files without the archive attribute, **r** for read-only files or **-r** for files that are not read-only. You can combine these letters as in /a:hr to list only read-only files and hidden files. Only use the colon when putting characters after it. If you do not use this switch, DOS only lists files that are not hidden or system files.

/o:sortorder: Displays the file listing in a sorted order. Sortorder must be blank to sort directories before files with each in alphabetical order, **n** for alphabetical by filenames, **e** for alphabetical by extension, **d** for in order by date and time, **s** for ascending size order, or **g** to group directories before files. You can also add a hyphen before the n, e, d, s, or g to reverse the order of the listing. You can combine these letters as in /o:ed to sort the files in order by their extension and those with the same extension by their date. Only use the colon when putting a character after it. If you do not use this switch, DOS lists files and directories in the order they are listed in the file allocation table.

/s: Uses the files in the selected directory and its subdirectories.

/b: Displays only filenames and extensions with each file on a separate line. If combined with the /s switch, DIR lists the matching files and includes the path information before the filename.

/l: Changes the display from uppercase to lowercase.

/c: Displays the file compression ratio comparing the uncompressed and compressed size of the file. When you enter /ch, DOS uses the host allocation unit size.

APPLICATION

If you want to list the files starting with BUDG in the FINANCE subdirectory on drive A in alphabetical order, you would make the following entry:

```
DIR A:\FINANCE\BUDG* /o:n
```

DOS displays the drive serial number; volume name; matching files including the date and time they were saved, and their size; the number of bytes the listed files use and the number of bytes remaining on the disk.

NOTE

You can create default DIR command settings by setting the environment variable DIRCMD to the options you want. For example, you can enter the

command SET DIRCMD=/O:N /P to have all subsequent DIR commands use these two switches. To override a default DIR command switch, you must include the switch with a hyphen between the slash and the letter as in DIR /-O /-P.

DISKCOMP — External

Covered on page 67

Use DISKCOMP to compare two disks to see if they are the same except for different serial numbers.

SYNTAX

DISKCOMP [drive1:] [drive2:] [/1] [/8]

CUSTOMIZING

PARAMETERS

drive1: Specifies the drive containing the first to compare.

drive2: Specifies the drive containing the second disk to compare.

SWITCHES

/1: Compares only the first side of the disk which 160K and 180K disks use.

/8: Compares only the first eight sectors of the disk which 160K and 320K disks use.

APPLICATION

You can use DISKCOMP to check that a disk you created with DISKCOPY still contains the same information as the original. To compare a disk in drive A with a disk in drive B enter:

DISKCOMP A: B:

DOS displays a prompt telling you to put the first disk in drive A and the second disk in drive B. When you press a key, DOS compares the two disks. After the disks are compared, you can compare a new set of disks by typing a Y and pressing a key after inserting the next set of disks.

DISKCOPY — External

Covered on page 64

DISKCOPY makes a duplicate of a disk. The copy disk must be the same capacity of the original disk. The copy disk is formatted if required.

SYNTAX

DISKCOPY [drive1:] [drive2:] [/1] [/v]

CUSTOMIZING

PARAMETERS

drive1: Specifies the drive for the source disk that you want to copy.

drive2: Specifies the drive for the target disk that will contain the copy.

SWITCHES

/1: Copies only the first side of the disk which 160K and 180K disks use.

/v: Verifies the disk is copied correctly.

APPLICATION

This command is used to make a quick backup copy of a floppy disk and archival copies of purchased software. To make a backup copy using drive A for the original and drive B for the target disk, enter:

```
DISKCOPY A: B: /V
```

DOS displays a prompt telling you to put the source disk in drive A and the target disk in drive B. When you press a key, DOS will copy the disk in drive A. DOS formats the disk in drive B if necessary, using the same capacity as the disk in drive A. Any data previously on drive B is erased. This command makes an exact copy of the original. Only the serial numbers of the two disks will be different. After the disks are copied, you can copy a new set of disks by typing a Y and pressing a key after inserting the next set of disks.

DOSKEY External

DOSKEY is used to store executed DOS commands. When these commands are kept you can repeat, edit and use them to create macros.

SYNTAX

```
DOSKEY [/reinstall] [/bufsize=size] [/macros] [/history] [/insert|overstrike]
       [macro=text]
```

CUSTOMIZING

PARAMETERS

No parameter entry: Loads the DOSKEY program using the default settings.

macro=text: Creates a DOSKEY macro. Macro must be replaced by the macro name and text must be replaced by the commands that the macro performs. If you want to delete a macro do not supply any text after the equals sign.

SWITCHES

/reinstall: Reinstalls the DOSKEY program over an existing one so you can load DOSKEY with different settings.

/bufsize=size: Specifies the size of the buffer that DOSKEY uses to store DOS commands and keystrokes. Replace size with the number of bytes. If you do not use this switch, DOS uses the default of 1024 bytes.

/macros: Displays a list of DOSKEY macros. By combining this switch with a redirection symbol such as >, you can store these macros in a file.

/history: Displays a list of DOS commands stored in the buffer DOSKEY uses. By combining this switch with a redirection symbol such as >, you can store these commands in a batch file.

/insert|overstrike: Specifies whether new characters are inserted into DOS command lines (/insert) instead of replacing them (/overstrike). The default is /overstrike.

APPLICATION

Load the DOSKEY command when you plan to need a series of similar DOS commands. You can the recall commands and alter them. Make the following entry:

DOSKEY

DOSSHELL — External

DOSSHELL loads the Shell program which provides a graphic interface to DOS.

Covered on page 170

SYNTAX

DOSSHELL [/t:l|m|h|number] [/g:l|m|h|number] [/b] [/n] [/s]

CUSTOMIZING

SWITCHES

/t:l|m|h|number: Loads the Shell using a text screen using low, medium, or high quality. If you enter a number, the DOS Shell uses the quality level that comes closest to displaying that many lines on the screen.

/g:l|m|h|number: Loads the Shell using a graphics screen using low, medium, or high quality. If you enter a number, the DOS Shell uses the quality level that comes closest to displaying that many lines on the screen.

/b: Loads the DOS Shell using the black and white color schemes.

APPLICATION

If you want to start the DOS Shell with the 34 line graphics display, you could enter:

DOSSHELL /g:34

ECHO — Batch files only

ECHO displays a prompt message during the execution of a batch file, displays the current status of ECHO, or changes whether or not DOS commands display as they execute.

SYNTAX

ECHO[on|off] [message]

CUSTOMIZING

PARAMETERS

on|off: Changes the command echoing on or off.

message: Specifies the text to display on the screen.

APPLICATION

If you want to prevent the display of DOS commands as a batch file executes, you might include this statement at the beginning of the file:

```
@ECHO OFF
```

The @ sign keeps DOS from echoing or displaying this line.

EDIT — External

Covered on page 217

Use EDIT to load the DOS Editor. You can use the Editor to edit ASCII text files. These files include batch files, ASCII files created by other programs, and files created by redirecting the output of other DOS commands. Menu options let you retrieve and save files, print them and search them for text. The Editor menu is covered in Chapter 9.

SYNTAX

EDIT [drive:][path][filename] [/h] [/nohi] [/b] [/g]

CUSTOMIZING

PARAMETERS

drive: Specifies the drive containing the file that you want to edit.

path: Specifies the directory containing the file that you want to edit.

filename: Specifies the file that you want loaded after the Editor is loaded.

SWITCHES

/h: Displays the maximum number of lines on the screen that your hardware is capable of.

/nohi: Sets the editor to not use high intensity so you can see the screen on portable computers and some monochrome screens.

/b: Displays the Editor in black and white instead of color.

/g: Updates CGA screens faster to eliminate the "snowy" appearance.

APPLICATION

If you want to edit a file called MENU.BAT using the Editor, you would enter the following:

```
EDIT MENU.BAT
```

When you want to leave the Editor, press Alt and select **File** and **Exit.** With a mouse, click File in the menu bar and Exit in the File menu.

EDLIN — External

Entering EDLIN loads the EDLIN editor which is a line editor you can use to edit ASCII text files. EDLIN does not have the menu options available with the EDIT DOS Editor. It is still offered with DOS 6 for compatibility with early DOS releases but does not offer any features that the Editor does not have.

SYNTAX

EDLIN [drive:][path]filename [/b]

CUSTOMIZING

PARAMETERS

drive: Specifies the drive containing the file that you want to edit.

path: Specifies the directory containing the file that you want to edit.

filename: Specifies the file that you want to edit.

SWITCHES

/b: Causes EDLIN to ignore Ctrl-Z characters so it reads in the number of characters selected by the file size in the file allocation table.

APPLICATION

If you want to edit a file using EDLIN called MENU.BAT, you would enter the following:

EDLIN MENU.BAT

When you want to leave EDLIN, type a **q** and press Enter↵.

EMM386 — External

The EMM386 command enables or disables EMM386 expanded memory.

Covered on page 268

SYNTAX

EMM386 [on|off|auto] [w=on|off]

CUSTOMIZING

PARAMETERS

on|off|auto: Controls use of the EMM386.EXE device driver. The three choices activate the device driver, suspend it or place it in auto mode which enables Weitek coprocessor support when a program asks for it.

w=on|off: Enables or disables Weitek coprocessor support.

APPLICATION

If you want to use EMM386 expanded memory, you would use this command:

EMM386 ON

EXPAND — External

Use EXPAND to expand a compressed file from one of the original DOS disk.

SYNTAX

EXPAND [drive:][path]filename [[drive:][path]filename[...]][destination]

CUSTOMIZING

PARAMETERS

[drive:][path]filename: Selects the name of the compressed file to expand. You can supply multiple filenames by separating them with spaces. You cannot use wildcards (* and ?).

destination: Selects location and name of the expanded files. When you do not include a destination, this command prompts for one.

APPLICATION

You can transfer MEM.EXE from the first DOS program disk by entering the command:

EXPAND A:MEM.EX_ C:\DOS\MEM.EXE.

FASTHELP — Internal

Use FASTHELP to display a list of DOS commands with a brief description of the commands, or to display help information on specific commands.

SYNTAX

FASTHELP [command]
command /?

CUSTOMIZING

PARAMETERS

no parameter entry: Displays a list of DOS commands and brief description of each one.

command: Specifies the DOS command to display the information about.

APPLICATION

Use this command to remind you about the switches or syntax for a command. For example, to find all the switches available with the COPY command, enter:

FASTHELP copy

Another way to enter this command is:

copy /?

FASTOPEN — External

Covered on page 271

FASTOPEN causes DOS to track the location of files and directories as well as caching the file data so data access is quicker. When you open a file, FASTOPEN records the file's location so the next time the file is needed, DOS already has the file location available. This command is usually executed from the CONFIG.SYS file or the AUTOEXEC.BAT file.

SYNTAX

FASTOPEN drive:[=n] [/x] OR
INSTALL=FASTOPEN.EXE drive:[=n] [/x]

CUSTOMIZING

PARAMETER

drive=n: Specifies the drive for which you want to track open files and directories. If =n is used with the n replaced by a number between 10 and 999, this sets the number of files that this command tracks. If you do not use =n, FASTOPEN uses 10.

SWITCHES

/x: Stores the cache this command creates in expanded memory.

APPLICATION

To use the FASTOPEN command to improve disk performance for drive C and D and track 150 files on each disk, you would enter:

FASTOPEN C:=150 D:=150

FDISK — External

Covered on page 316

Displays or changes how a hard disk is divided into partitions or how an extended DOS partition is divided into logical drives.

SYNTAX

FDISK

APPLICATION

After you enter FDISK, a series of selections are made from the menus that FDISK presents.

NOTE

Changing the partition information makes the information that was previously stored on the disk unavailable. If you change partition information, the only way you can later access the files on the hard disk is if you have used the MIRROR command earlier with the /partn switch and now use UNFORMAT with the /partn switch. Do not use FDISK with drives that are created with the SUBST or JOIN commands. Since DOS can handle large capacity disks you are no longer required to divide high capacity disks into partitions.

FILES — CONFIG.SYS only

Covered on page 270

Use FILES to set the number of files that can be open at one time using system calls.

SYNTAX

FILES=x

CUSTOMIZING

PARAMETERS

x: Specifies a number between 8 (the default) and 255 for the number of files you want to be able to open at one time.

APPLICATION

Database applications frequently require a large number of open files. If you want to increase the number of files to 99, you would enter this command in your CONFIG.SYS file:

```
FILES=99
```

FIND — External

The FIND command locates text in a file.

Covered on page 158

SYNTAX

FIND [/v] [/c] [/n] [/i] "string" pathname

CUSTOMIZING

PARAMETERS

string: The text to find.

pathname: The name of the file or files to search. You cannot use * or ? to select multiple files but you can list the files to search by separating them with a space.

SWITCHES

/v: Displays lines that do not contain the string.

/c: Displays the number of lines in each file that contain the string.

/n: Displays the line number as well as the line that contains the string.

/i: Finds the string with either upper or lowercase letters.

APPLICATION

You may have several files with non-descriptive names and want to search them for a keyword or phrase to find the one you want. Use FIND to look for the identifying text as in this example which looks for the string Sales in either upper or lowercase in three files:

FIND "Sales" FILE_1 FILE_2 FILE_3

You can also use the FIND command as part of a filter as in this example which searches for files in the current directory which contain the date November 14, 1990:

DIR |FIND "11-14-90"

FORMAT External

The FORMAT command prepares a disk for data storage. Use this command on floppy disks before you first store information, on a new hard disk or after you change the partition information. FORMAT should not be used on a disk containing data unless you no longer have a need for the data.

SYNTAX

FORMAT drive [/q|u] [/v:label] [/s|b]
FORMAT drive [/f:size] [/q|u] [/v:label] [/s|b]
FORMAT drive [/1] [/4] [/q|u] [/v:label] [/s|b]
FORMAT drive [/8] [/q|u] [/s|b]
FORMAT drive [/n:tracks] [/t:sectors] [/q|u] [/v:label] [/s|b]

CUSTOMIZING

PARAMETERS

drive: Specifies the drive to be formatted.

SWITCHES

/q: Performs a quick disk format that erases the file allocation table and the root directory.

/v:label: Adds the text after the colon as a volume label for the disk.

/s: Copies the three system files to the newly formatted disk. These files are IO.SYS, MSDOS.SYS and COMMAND.COM. The first two are hidden and read-only.

/b: Copies the IO.SYS and MSDOS.SYS hidden and read-only system files to the newly formatted disk.

/f:size: Formats a floppy disk to a different capacity than the default for the disk drive when that size is compatible with the drive. Size is replaced by the capacity of the disk. This switch can format floppy disks for 160K, 180K, 320K, 360K, 720K, 1.2 MB, 1.44 MB and 2.88 MB. Various options exist for representing the size. For example, a 1.44 MB disk can be entered as 1440, 1440K, 1440 KB, 1.44, 1.44 M, or 1.44 MB.

/u: Unconditionally formats the disk by writing over every location on the disk so it cannot later be unformatted. This is the default format type.

/1: Formats only one side of the disk.

/4: Formats a 5 1/4 disk in a high capacity drive to only 360K.

/8: Formats a disk to only have eight sectors on each track.

/n:tracks: Specifies the number of tracks that the formatted disk will have.

/t:sectors: Specifies the number of sectors that the formatted disk will have.

APPLICATION

When you have open a box of floppy disks and are ready to use them, you first need to format them so DOS can store the files on the disk. To format them you would enter the following:

FORMAT A:

GRAPHICS External

The GRAPHICS command sets DOS to print graphics screens using the Shift-PrtScr key combination.

SYNTAX

GRAPHICS [type] [drive:][path][filename] [/r] [/b] [/lcd] [/printbox:id]

CUSTOMIZING

PARAMETERS

type: Specifies the printer you are using to print the graphics screen.

[drive:][path][filename]: Specifies the name of the file containing the information about the printer selected by type.

SWITCHES

/r: Prints white on black screens as they appear rather than inverted which is the default.

/b: Prints the background in color when the type is COLOR4 or COLOR8.

/lcd: Prints the graphic screen using the LCD screen ratio rather than the CGA screen ratio.

/Printbox:id: Specifies the aspect ratio to use. This switch is either /Printbox:lcd or /Printbox:std.

APPLICATION

If you want to print a graphics screen using one of the printers selected by the type parameter or a compatible, you must use this command before you press Shift-PrtScr. A sample of using this command is:

GRAPHICS DESKJET /r

INSTALL — CONFIG.SYS only

INSTALL loads a terminate and stay resident program during processing of the CONFIG.SYS file when you start DOS. It can be used with the FASTOPEN.EXE, KEYB.COM, NLSFUNC.EXE or SHARE.EXE programs.

SYNTAX

INSTALL=[drive:][path]filename [parameters]

CUSTOMIZING

PARAMETERS

drive: Specifies the drive containing the program to load.

path: Specifies the path containing the program to load.

filename: Specifies the name of the program to load.

parameters: Provides the arguments used by the program.

APPLICATION

If you want to execute the KEYB.COM program to use the German keyboard when DOS processes the CONFIG.SYS file, you would include a command like this:

INSTALL=KEYB.COM GR,850,C:\DOS\KEYBOARD.SYS

KEYB — External

Use KEYB to set the keyboard to the layout of another country's keyboard. Changing the keyboard allows you to access frequently used characters of another language.

SYNTAX

From the DOS command prompt or in a batch file:

KEYB [xx[,yyy],[pathname] [/e] [/id:nnn]

In CONFIG.SYS:

INSTALL=KEYB [xx[,yyy],[pathname] [/e] [/id:nnn]

CUSTOMIZING

PARAMETERS

No parameter entry: Displays the current keyboard code, the code page for the keyboard code and the active code page.

pathname: Specifies the path and filename of the keyboard definition file which is normally C:\DOS\KEYBOARD.SYS.

xx: Specifies the two letter keyboard code.

yyy: Specifies the code page to use with keyboard code.

SWITCHES

/e: Indicates that the keyboard is an enhanced keyboard with two sets of cursor movement keys and twelve function keys.

/id:nnn: Specifies the keyboard in use. It is followed by a three letter code.

APPLICATION

When you are working on a word processing document for another language you may want to change the keyboard so you can type vowels with umlauts (two dots above the letter). To make this change, enter a command at the DOS prompt or in a batch file that looks like:

```
KEYB GR,850,C:\DOS\KEYBOARD.SYS
```

This command changes the keyboard from the current setting to the German keyboard. After making the change, the ä and ö are to the left of the L and the ß is to the right of the 0. If you wanted to include this command in the CONFIG.SYS file, the command would look like:

```
INSTALL=KEYB.COM GR,850,C:\DOS\KEYBOARD.SYS
```

LABEL — External

LABEL adds, alters or removes a disk label on a hard or floppy disk. Disk labels can be up to eleven characters not including the following ones: * ? / \ | . c ; : =: ( ) [ ] ^ &. Lowercase letters are converted to uppercase.

Covered on page 53

SYNTAX

```
LABEL [drive:][label]
```

CUSTOMIZING

PARAMETERS

drive: Specifies the drive to which you want to add, alter or remove a label.

label: Provides the label you want to add to the disk or use to replace the current label.

APPLICATION

To change the label of drive A to ARCHIVES, you would enter:

```
LABEL A:ARCHIVES
```

NOTE

You cannot use this command with drives that you have created with the SUBST or JOIN commands.

MEM — External

MEM displays memory usage and how DOS is using the available conventional RAM, extended and expanded memory.

SYNTAX

MEM [/debug|classify|free|module name] [/page]

CUSTOMIZING

SWITCHES

/debug or **d:** Displays the contents of RAM indicating the address, name, size and type of every program that is loaded in RAM. Breaks down device drivers into specific devices that are loaded.

/classify or **c:** Lists programs in memory, their size and the memory they use. Also displays a summary of the memory in use, and the longest available memory block.

/free or **f:** Displays information on free conventional and upper memory.

/module name: Lists in detail a module's memory use. Name is the name of the module. You can separate module and the module's name with a space or a colon.

/page or **/p:** Displays one screen of output at a time. Press any key to see the next screen.

APPLICATION

This command displays the conventional RAM, extended and expanded memory that is present and available. You can check the amount of memory on your system by entering:

MEM

MIRROR — External

MIRROR creates files that allow you to rebuild a disk at a later time.

SYNTAX

MIRROR [drive:] [/tdrive[-entries]] [/1]
MIRROR /partn
MIRROR /u

CUSTOMIZING

PARAMETERS

drive: Specifies the drive for which DOS creates a mirror file of the system information.

SWITCHES

/tdrive: Specifies the drive for which DOS creates and maintains a deletion tracking file.

entries: Specifies the size of the deletion tracking file by selecting the number of files maintained in this file. The default number of entries depends on the disk's capacity.

/1: Creates a new mirror file without first backing up the MIRROR.SAV file to MIRROR.BAK. The default is to backup this file so you can return to the prior version if the original ever becomes corrupted.

/partn: Creates a copy of the partition table. You must provide the drive letter of the floppy disk where this command saves the partition information in a file called PARTNSAV.FIL. This floppy disk should be kept in a safe location.

/u: Removes the part of the MIRROR command that remains in memory for updating deletion tracking files.

APPLICATION

You can use this command to create mirror files of your hard disks as well as deletion tracking files for these disks. A command like this would be included in the AUTOEXEC.BAT file so its features are always be available when you use the system. If you have hard disks labeled C and D, you might use this command:

```
MIRROR C: D: /tC /tD
```

NOTE

Do not use MIRROR to create deletion tracking files on drives created with JOIN or SUBST.

MKDIR or MD — Internal

Covered on page 108

The MD or MKDIR command creates a subdirectory using the name you provide.

SYNTAX

```
MKDIR [drive:][path]
MD [drive:][path]
```

CUSTOMIZING

PARAMETERS

drive: Specifies the drive containing the disk where this command creates a directory.

path: Provides the name of the directory that this command creates.

APPLICATION

Use MD to create a logical structure on a hard disk to help you organize your access to files. To create three directories under the current directory you might type these commands:

MD MEMOS
MD LETTERS
MD REPORTS

If you use a backslash in front of the subdirectory names they are added under the root directory rather than under the current directory.

MODE — External

MODE allows you to specify how you want to set specific devices.

SYNTAX

```
MODE lpt#[:] [cols=c] [lines=l] [retry=r]
or: MODE lpt#[:] [c][,[l][,r]]
MODE com#[:] baud=b [parity=p] [data=d] [stop=s] [retry=r]
or: MODE com#[:] b[,p[,d[,s[,r]]]]
MODE lpt#[:]=com#[:]
MODE [device] [/status]
MODE device CODEPAGE PREPARE=((yyy[ yyy])[ pathname])
or: MODE device CP PREP=((yyy[ yyy])[ pathname])
MODE device CODEPAGE SELECT=yyy
or: MODE device CP SEL=yyy
MODE device CODEPAGE REFRESH
or: MODE device CP REF
MODE device CODEPAGE [/status]
MODE display,n
MODE [display],shift[,test]
MODE CON[:] [cols=m] [lines=n]
MODE CON[:] [rate=m] [delay=n]
```

CUSTOMIZING

PARAMETERS

#: Specifies the parallel or serial port you are working with. For parallel ports, this number is 1, 2, or 3. For serial ports, this number is 1, 2, 3, or 4. The colon after the number is optional.

cols=s and **s:** Specifies the number of columns that fit in a line. The choices are 80 or 132; the default is 80.

lines=l and **l:** Specifies the number of lines that can print in one inch. The choices are 6 or 8; the default is 6.

retry=r and **r:** Specifies the action DOS takes when a timeout error occurs. Choices are: e; to return an error message (which is also the default), b; to return a busy message, r; to return a ready message, or none; to not return any signal.

baud=b and **b:** Specifies the baud rate (how many bytes per second the information is send through the port). Choices are 11 for 110, 15 for 150 baud, 30 for 300 baud, 60 for 600 baud, 12 for 1200 baud, 24 for 2400 baud, 48 for 4800 baud, 96 for 9600 baud, 19 for 19200 baud.

parity=p and **p:** Sets the parity. Choices are n for none, e for even, o for odd, m for mark, or s for space. The default is even.

data=d and **d:** Sets the number of data bits. Choices are 5, 6, 7 or 8. The default is 7.

stop=s and **s:** Sets the number of stop bits. The choices are 1, 1.5 or 2. The default is 1 for all baud rates except 110 baud which uses the default of 2.

device: Specifies the device you are using with the MODE command. Choices include CON (monitor and keyboard), LPT1, LPT2, LPT3, COM1, COM2, COM3, and COM4.

yyy: Specifies the code page number that is loaded or selected.

display: Specifies the display. Choices are 40 for forty characters per line, 80 for eighty characters per line, BW for black and white graphics, CO for color graphics, MONO for monocolor display.

n: Sets the number of lines in the display. Choices are 25, 43 and 50 although for the last two ANSI.SYS must be loaded.

shift: Shifts the display to the right or left. Choices are R to shift display one column to the right and L to shift display one column to the left.

cols=m: Sets the number of columns in the display. Choices are 40 and 80.

lines=n: Sets the number of lines in the display. Choices are 25, 43 and 50 although for the last two ANSI.SYS must be loaded.

rate=r: Sets the number of times per second a keystroke is repeated when the key is held down. R can be a number between 1 and 32 to repeat the character 2 to 30 times per second.

delay=d: Sets the time that DOS waits between the first and second character when you hold a key down. Choices are 1 through 4 to represent .25, .5, .75 and 1 second intervals.

SWITCHES

/status or **/sta:** Displays the status for the device or code page that you select.

APPLICATION

This command is used for several reasons. You can use the MODE command to change the settings of a printer attached to a parallel port as in:

```
MODE lpt1 132,8,b
```

This command sets the printer connected to the first parallel printer port to print 132 characters across, eight lines per inch and return a busy signal when a time-out error occurs.

MORE — External

MORE displays one screen of a file or DOS command output at a time.

Covered on page 155

SYNTAX

source |MORE
MORE <source

CUSTOMIZING

PARAMETERS

source: Specifies source of lines to display. This can be a file or another DOS command such as TYPE.

APPLICATION

If you have a lengthy text file called LONGTEXT and you want to see it a screen at a time, you would enter one of the two following examples:

MORE <LONGTEXT
TYPE LONGTEXT |MORE

NOTE

Since this command creates a temporary file, the current disk must not be write protected and have room for the temporary file. The temporary file size depends on the size of the source. If you have ANSI.SYS loaded, you can change the number of lines that appear on the screen so DOS may display 43 or 50 lines at a time.

MOVE — External

This command moves one or more files to another location or renames directories.

SYNTAX

MOVE [drive:][path]filename[,[drive:][path]filename[...]] destination

CUSTOMIZING

PARAMETERS

[drive:][path]filename: Selects the location and name of the file or files to move or the directory to rename.

destination: Selects the new location of the file or the new name of the directory.

APPLICATION

You can move a file named WINMINE from your Windows directory to your root directory by entering the following command:

MOVE c:\windows\winmine.exe c:\

MSAV — External

Use MSAV to check disks for known viruses. The Windows version of the program is MWAV.

SYNTAX

MSAV [drive:] [/slc] [/r] [/all] [/n] [/p [/f] [/video]

CUSTOMIZING

PARAMETER

drive: Selects the drive to scan for viruses. If you do not supply a drive, this command uses the current one.

SWITCHES

/s: Scans the selected drive without removing discovered viruses.

/c: Scans the selected drive and removes discovered viruses.

/r: Creates a report named MSAV.RPT. This report lists the number of files checked for viruses, the number of discovered viruses, and the number of removed viruses.

/a: Scans all drives except drive A and drive B.

/l: Scans all local drives except network drives.

/n: Displays the contents of MSAV.TXT then scans the current selected drives for viruses.

/P: Displays a command-line interface instead of the graphical interface.

/f: Disables the display of scanned filenames for when you are using the /N or /P switch.

/video: Displays the switches that affect how MSAV appears and includes the switches listed below.

/25: Displays MSAV using a screen length of 25 lines.

/28: Displays MSAV using a screen length of 28 lines /43: Displays MSAV using a screen length of 43 lines for when you have a EGA or VGA display adapter.

/50: Displays MSAV using a screen length of 50 lines for when you have a VGA display adapter.

/60: Displays MSAV using a screen length of 60 lines for when you have a Video 7 display adapter.

/in: Displays MSAV using colors.

/bw: Displays MSAV using a black-and-white color scheme.

/mono: Displays MSAV using a monochrome color scheme.

/lcd: Displays MSAV using a LCD color scheme.

/ff: Uses fast screen updating for CGA display adapters.

/bf: Uses the computer's BIOS to display video.

/nf: Disables using alternate fonts.

/bt: Uses Windows' graphical mouse pointer character.

/ngm: Uses the default mouse pointer character.

/le: Switches the left and right mouse buttons.

/ps2: Resets the mouse when it disappears or stops moving.

APPLICATION

To check your hard disk for a virus, enter the following command:

```
MSAV c:
```

MSBACKUP External

Use the menu-driven MSBACKUP utility to back up or restore one or more files from one disk onto another. This command can be used in place of BACKUP and RESTORE commands from previous releases of DOS.

You can back up all files on a disk or files that have changed since your last backup, schedule backups so they are done automatically on a regular basis, and restore files that you have backed up. The Windows version of this command is MWBACKUP.

SYNTAX

```
MSBACKUP [setup_file] [/bw|lcd|mda]
```

CUSTOMIZING

PARAMETERS

setup_file: Specifies the setup file, with a .SET file extension, that defines files to back up and the type of backup you want to perform. MSBACKUP creates a setup file when you save program settings and file selections. If you do not specify a setup file, MSBACKUP uses DEFAULT.SET.

SWITCHES

/bw: Starts MSBACKUP using a black and white display.

/lcd: Starts MSBACKUP using a video mode compatible with laptop displays.

/mda: Starts MSBACKUP using a monochrome display adapter.

APPLICATION

You may want to do a daily backup of new files, to ensure that you do not lose data if something happens overnight. Assuming that you have created a setup file that includes all the files and procedures you wish to use each day, called DAILY.SET, at the end of the day, you would enter:

```
MSBACUP daily.set
```

PATH — Internal

Covered on page 117

The PATH command specifies the directories that DOS searches for program and batch files when it does not find the files in the current directory.

SYNTAX

PATH [drive:path1][;drive:path2]...[;drive:pathn]

CUSTOMIZING

PARAMETERS

no parameters: Displays the existing path.

[drive:path1]: Provides the drives and directories for DOS to check with each drive and directory separated by ;'s. These are checked in the order in which they are specified.

;: Causes DOS to begin checking only the current directory after a previous PATH statement that caused other directories to be checked.

APPLICATION

When you want to start a program such as WordPerfect from any directory on your disk and have DOS find the program files that you need, you want to enter a PATH statement with references to the directories that you need. You might enter:

```
PATH C:\WP;C:\WP\SPELL;C:\;C:\DOS;C:\BAT
```

The first two entries in the preceding PATH statement are added for WordPerfect program files. The other entries are to enable you to find DOS and batch files that you might need.

Covered on page 91

NOTE

This command sets the environment variable PATH to the value of the path command.

PAUSE — Batch files only

Covered on page 252

PAUSE suspends execution of a batch file and displays a message instructing the user to press a key to have the batch file continue.

SYNTAX

PAUSE

APPLICATION

An example of a batch file that uses this command is:

```
@ECHO Put the disk in drive A and close the drive door
PAUSE
FORMAT A:
```

This batch file displays the message after the ECHO command, and then displays the message "Press any key to continue ..." When the user presses a key, the batch file formats drive A.

PRINT — Internal

PRINT prints text files in the background while other tasks are executing.

Covered on page 106

SYNTAX

PRINT[/d:device][/b:size][/u:value1][/m:value2][/s:timeslice][/q:qsize]
[/t][pathname][/c][/p]

PARAMETERS

pathname: Specifies the file to print.

CUSTOMIZING

SWITCHES

All switches except /t, /c and /p must be entered the first time you use the PRINT command.

/d:device: Specifies the print device where the files are printed. The device must be one of PRN, LPT1, LPT2, LPT3, COM1, COM2, COM3, or COM4. If this optional argument is omitted then DOS prompts you for the print output device, suggesting PRN as a default.

/b:size: Sets the size in bytes of the buffer the PRINT command uses to store part of the file it is printing. The default and minimum is 512 but this can be as high as 16384.

/u:value1: Specifies the number of clock ticks (1/18th of a second) the PRINT command waits before determining that the printer cannot accept more information. The default is 1 but you can supply a number between 1 and 255.

/m:value2: Specifies the number of clock ticks the PRINT command has to send one character to the printer. The default is 2 but you can supply a number between 1 and 255.

/s:timeslice: Specifies the number of clock ticks other tasks have before DOS tries sending more information to the printer. The default is 8 but you can supply a number between 1 and 255.

/q:qsize: Specifies the number of files that the PRINT command can store in its queue. The default is 10 but you can supply a number between 4 and 32.

/t: Cancels printing the current file, sounds any printer alarm, prints the message "All files canceled by operator," removes all files from the queue, and advances the printer a page.

/c: Removes the file specified before the /c switch and any after it (unless it belongs to the /p switch) from the print queue.

/p: Adds the file specified before the /p switch and any after it (unless it belongs to the /c switch) to the print queue.

APPLICATION

If you want to print several batch files, you might use this as your first PRINT command to change the default settings the PRINT command uses:

```
PRINT /d:LPT1 /b:2048 /m:8 /s:20
```

This command send the output of the PRINT command to LPT1, reserves 2048 bytes of buffer space, and sets DOS to alternate between eight clock ticks for the PRINT command and twenty clock ticks for other tasks you are performing. When you are ready to print the files you could use this command:

```
PRINT *.BAT
```

This adds all files in the current directory with a .BAT file to the print queue and starts printing the files.

PROMPT — Internal

Use PROMPT to change the appearance of the DOS prompt.

Covered on page 106

SYNTAX

PROMPT [text]

CUSTOMIZING

PARAMETERS

No parameter entry: Returns the command prompt to the drive letter and a greater than sign.

text: Characters that make up the prompt. You can include these special characters:

- **$q** Displays equals sign (=)
- **$$** Displays dollar sign ($)
- **$t** Displays time
- **$d** Displays date
- **$p** Displays drive and path
- **$v** Displays DOS version
- **$n** Displays drive letter
- **$g** Displays greater than sign (>)
- **$l** Displays less than sign (<)
- **$b** Displays vertical bar character (|)
- **$_** Moves to beginning of next line
- **$e** Displays ESC character (for ANSI.SYS)
- **$h** Deletes previous character

APPLICATION

If you want to change the DOS prompt to display the path and a greater than sign you would enter this command.

PROMPT PG

NOTE

This command sets the environment variable PROMPT to the current prompt setting. You can see this environment variable using the SET command.

RECOVER — External

Covered on page 322

Use RECOVER to recover files from a bad or defective disk. This command reads a disk and recovers sectors from the files that it can find. This command is used for when you have a damaged disk. Since this command may not be able to recover your files, creating backups is a good idea.

SYNTAX

RECOVER pathname
RECOVER drive:

CUSTOMIZING

PARAMETERS

pathname: Specifies the files that you want to recover.

drive: Specifies the disk from which you want to recover files.

APPLICATION

This command is used when you have a disk where you cannot read the data files. To recover all of the files possible from drive A, enter:

RECOVER A:

**REM — Batch and CONFIG.SYS only

Covered on page 252

REM adds a line to a batch or CONFIG.SYS file that DOS does not process. You can enter any text you want after the REM command.

SYNTAX

REM comment

CUSTOMIZING

PARAMETERS

comment: Specifies the text that is included in the file that DOS does not process. It must not include the < or > characters.

APPLICATION

Suppose you want to provide explanatory text in a batch file so another user will understand the commands performed. Your batch file might include these lines:

REM Next line checks if end of month processing should be done.

IF %1=Y MONTHEND

**RENAME or REN — External

RENAME changes the name of one or more files. This command cannot change the name of subdirectories.

Covered on page 97

SYNTAX

RENAME [drive:][path]filename1 filename2

CUSTOMIZING

PARAMETERS

drive: Specifies the drive containing the file to rename.

path: Specifies the directory containing the file to rename.

filename1: Specifies the filename to rename. You can use the * and ? wildcard characters in the filename.

filename2: Provides the new filename. You can use the * and ? wildcard characters in the filename. The characters not provided by wildcard characters are the ones that change.

APPLICATION

You can use this command to rename files such as this example which renames files on drive A that have eight-character file names that end in 89 to end in 90:

RENAME A:??????89.* ??????90.*

REPLACE — External

REPLACE replaces files from one disk with those from another, and adds files on one disk that are not on another. This command is used to update the contents of directories.

Covered on page 323

SYNTAX

REPLACE pathname [drive:][path] [/a] [/p] [/r] [/s] [/w] [/u]

CUSTOMIZING

PARAMETERS

pathname: Specifies the location and the files containing the original files that the REPLACE command will replace or add.

drive: Specifies the drive where the files are to be replaced.

path: Specifies the directory where the files are to be replaced.

SWITCHES

/a: Adds files from the pathname to the drive and path that are not already on the drive. Files that exist in both locations are not changed. You cannot use this with /s or /u.

/p: Prompts you for each file to replace before actually replacing it allowing you to type a Y to replace the file or an N to omit replacing the displayed file.

/r: Replaces read-only files as well as files without this attribute.

/s: Replaces files selected by pathname in any subdirectory of the directory selected by path. You cannot combine this switch with the /a switch.

/w: Prompts and waits for you to insert a disk into the drive before continuing the command. This switch is used in batch files when the batch file must pause for the user to insert the disk.

/u: Only replaces files in the drive and path selected if the files in the drive and path selected were created before the files selected by pathname. This lets you limit replacing files to those that have changed.

APPLICATION

This command is useful for checking that files that you want on multiple systems are present and up-to-date. For example, if you do not have a network, you may have some files that many people use for reference but do not change. When a change is made to these files, you can use these commands to update them by copying these files if they are not present and by copying the files that have changed that are present. This example assumes that the source files are on drive A and the files are normally stored in the C:\BUDGET directory. The batch file would contain these two lines:

```
REPLACE A:*.* C:\BUDGET /A
REPLACE A:*.* C:\BUDGET /U
```

RESTORE — External

Use RESTORE to restore files that were backed up with the BACKUP command. The switches and parameters of this command let you select the backed up files that are restored.

SYNTAX

RESTORE drive: [pathname] [/s] [/p] [/b:date] [/a:date] [/e:time] [/l:time] [/m] [/n] [/d]

CUSTOMIZING

PARAMETERS

drive: Specifies the disk containing the backup files.

pathname: Specifies the files you want to restore. It can be as simple as a drive as in C:, include a specific directory as in C:\PROGS, or select specific files C:\PROGS*.EXE.

SWITCHES

/s: Restores the subdirectories and files in the subdirectories as well as the files selected by the pathname.

/p: Prompts for permission to restore files that are read-only and files that have been modified since they were backed up.

/b:date: Restores files with a date on or before the specified date. The format of the date must match the format of the date used by the DATE command.

/a:date: Restores files with a date on or after the specified date. The format of the date must match the format of the date used by the DATE command.

/e:time: Restores files with a time at or earlier than the specified time. The format of the time must match the format of the time used by the TIME command.

/l:time: Restores files with a time at or later than the specified time. The format of the time must match the format of the time used by the TIME command.

/m: Restores files that have been modified since the last BACKUP command by only restoring files that have the archive attribute on the drive.

/n: Restores only the files on the backup disk that no longer exist on the source disk.

/d: Displays those files on the back-up disk which match your specifications set with the other switches.

APPLICATION

You can use this command when you need one of the files that you backed up with the BACKUP command. If your entire hard disk goes bad and you need to restore all of the files (except the COMMAND.COM and two hidden system files), you would enter a command like this:

```
RESTORE A: C: /S
```

Usually, you only need to restore one or a group of files due to an accidental deletion so you would enter a command like this:

```
RESTORE A: C:\PROGS\*.EXE
```

RMDIR or RD — Internal

RD or RMDIR removes the specified directory.

Covered on page 112

SYNTAX

```
RMDIR [drive:]path
RD [drive:]path
```

CUSTOMIZING

PARAMETERS

drive: Specifies the drive that contains the directory to remove. If you do not provide it, DOS assumes the current drive.

path: Tells DOS the name of the empty directory that you wish to remove.

APPLICATION

To remove the directories C:\LOTUS\ACCT and D:\TEMP, make these entries with another directory as the current directory:

```
RD C:\LOTUS\ACCT
RD D:\TEMP
```

NOTE

A directory is empty when only the . and .. entries remain in a directory listing. RD fails when you attempt to use it on the current directory or a directory that is not empty.

SMARTDRV External

SMARTDRV can start or change the settings for the SMARTDrive utility that creates a disk cache in extended memory which can speed up disk operations.

SYNTAX

```
SMARTDRV [[drive[+|-]]...] [/e:elementsize] [initcachesize]
                [wincachesize]] [/b:<buffersize>] [/c] [/r] [/l] [/q] [/v] [/s]
```

Once SMARTDrive is running, use:

```
SMARTDRV [[drive[+|-]]...]] [/c] [/r]
```

CUSTOMIZING

PARAMETERS

drive+|-: Specifies the disk drive or drives you want to control caching. After the drive letter, put + to start read- and write-caching,: to stop caching, or nothing to only have read-caching.

/e:elementsize: Sets how many bytes of the cache SMARTDrive moves at one time. Valid values are 1024, 2048, 4096, and 8192.

initcachesize: Sets the initial size of the cache in kilobytes (when Windows is not running). This size affects the efficiency of SMARTDrive.

wincachesize: Sets the number of kilobytes SMARTdrive uses for the cache when Windows starts. This is the smallest size the cache can become.

/b:buffersize: Sets the read-ahead buffer size for the amount of data SMARTDrive reads when an application gets information from a hard disk.

/c: Writes cached information from memory to cached disks when there is less disk activity.

/r: Clears the current cache and restarts SMARTDrive.

/l: Prevents SMARTDrive from loading into upper memory blocks (UMBs), even if there are UMBs available.

/q: Causes SMARTDrive to not display status messages when starting, which is the default. Error messages are displayed either way.

/v: Causes SMARTDrive to show status and error messages when starting.

/s: Shows further information SMARTDrive's status.

APPLICATION

To add SMARTDrive's disk caching to your hard disk, enter the following command.

```
SMARTDRV c:
```

SORT — External

SORT resequences lines of input based on the characters in a column. If the characters in the selected column for two or more lines contain the same character, this command uses the next column to determine the order of the lines. SORT output is sent to the screen unless you direct it to another device or file.

SYNTAX

```
[source] |SORT [/r] [/+n]
SORT [/r] [/+n] <[source]
```

CUSTOMIZING

PARAMETERS

source: Specifies source of lines to sort such as a file or a DOS command such as TYPE. If you do not supply this information, DOS assumes the source is the keyboard.

SWITCHES

/r: Sorts the lines in reverse order instead of ascending order, the default.

/+n: Selects the column used to sort. The n must be replaced with the column number that you want to use to sort. If you omit this switch, DOS uses the first column.

APPLICATION

If you want to sort the current directory according to when the sizes of the files, you would make the following entry:

```
DIR |SORT /+13
```

NOTE

SORT can resequence the lines in files as large as 64K.

SYS — External

Covered on page 325

SYS transfers the IO.SYS and MSDOS.SYS hidden system files to another disk along with COMMAND.COM.

SYNTAX

SYS [drive1:][path] drive2:

CUSTOMIZING

PARAMETERS

drive1: Specifies the drive containing the system files.

path: Specifies the directory containing the system files.

drive2: Specifies the drive where the two hidden system files are copied.

APPLICATION

If you have a disk that already contains files that you want to use as a boot disk, you can use this command to transfer the system files to the disk. To transfer the two system files, assuming the system files are on drive A and you want to transfer them to drive B, you would need to enter the following:

SYS A: B:

TIME — Internal

Covered on page 275

TIME displays or sets the current time in your computer system. To accept the time displayed press ENTER. To change the time type a new time before pressing ENTER. DOS maintains this new setting for the current session or longer. In some newer model computers, the change remains until you change it again.

SYNTAX

TIME [time]

CUSTOMIZING

PARAMETERS

No parameter entry: Displays the current time and prompts for the new time.

time: Sets the system time to the time you supply. With times in the afternoon, you can enter the time using a twenty-four clock (hours after noon have twelve added to them) or using a twelve hour clock using a p or PM after the time.

APPLICATION

If you are using an older model PC when you enter TIME you see the following response:

```
Current time is  4:23:49.80p
Enter new time:
```

If the current time is 3:24 PM, you would type 3:24p or 15:24 and press Enter↵.

TREE — External

Covered on page 114

TREE displays the disk directory structure graphically.

SYNTAX

TREE [drive:][path][/f][/a]

CUSTOMIZING

PARAMETERS

drive : Specifies the drive that you want to examine.

path: Specifies the initial directory that you want to display.

/f: Displays the filenames in each directory.

/a: Uses text rather than graphic characters for the tree structure.

APPLICATION

You can use this command when you want to look at an overview structure of another drive by typing

TREE D:

TYPE — External

Covered on page 87

Use TYPE to display the contents of a text file.

SYNTAX

TYPE pathname

CUSTOMIZING

PARAMETERS

pathname: Specifies the file that you want to display.

APPLICATION

If you want to display the contents of ALLTEXT, you would enter the following:

TYPE ALLTEXT

UNDELETE — External

Covered on page 140

UNDELETE restores one or more deleted files. The Windows version of this command is MWUNDEL.

You use Undelete to start deletion protection, or to recover deleted files. DOS 6 supports three levels of deletion protection; Delete Sentry, Delete Tracker and Standard. Delete Sentry copies deleted files to the Sentry directory so they can simply be restored from that directory. This level

takes a small amount of memory and some disk space. Delete Tracker saves information about deleted files in a file called PCTRACKER.DEL, and requires some memory and very little disk space. Standard, which is automatically in effect, requires no memory or disk space, but makes it very difficult to recover deleted files.

SYNTAX

UNDELETE [/dt|ds|dos]
UNDELETE [/list|all|purge[drive]|status|load|unload|s[drive]|tdrive
[-entries]]

CUSTOMIZING

PARAMETERS

/dt: Restores files including the delete tracker file

/dos: Restores files using the information in the file allocation table and directory only.

/ds: Restores using the delete sentry file and directory only.

/list: Lists the information for the files that will be undeleted without restoring the files.

/all: Recovers all deleted files without prompting.

/load: Loads the memory resident Undelete program into memory.

/unload Unloads the memory resident portion of Undelete, which means that the delete sentry and delete tracker files are no longer updated.

/purge[drive]: Deletes the files stored in the delete sentry directory.

/status: Displays the type of delete protection in effect for the drive.

/s[drive]: Enables the delete sentry protection, recording information about deleted files in the given directory.

/tdrive [-entries]: Enables the delete tracker protection and loads it. entries is the maximum number of entries in the deletion tracking file.

APPLICATION

Use this command to restore files that have been accidentally deleted. An example of this command is:

UNDELETE *.DAT

This example searches for a hidden directory called SENTRY. If this directory is found, DOS displays the deleted files that can be restored, and prompts you to restore them. If the directory is not found, DOS searches for a PCTRACKR.DEL file in the root directory. IF found, DOS displays the number of deleted files, and breaks these down into files that can be restored, files that cannot be restored and files that can only be partially restored. For each file that can be completely or partially restored, DOS displays the file information and when it was deleted and then prompts if you want to restore the file. Type **Y** to restore it, or **N** to leave it deleted. If the deletion tracking file is not found, DOS displays the number of deleted files

located using the directory listings and the file allocation table, and breaks these down into restorable and non-restorable files. For each restorable file, DOS displays the file information and then prompts if you want to restore it. Type **Y** to restore it, or **N** to leave it deleted. Next, you must type the first letter of the file name.

UNFORMAT — Internal

UNFORMAT restores the files and directory of a disk after the FORMAT command is used, restores files in the root directory erased with the DEL command, and recreates damaged partition tables.

Covered on page 51

SYNTAX

UNFORMAT drive:[/l][/test][/p]
UNFORMAT /partn[/l][/p]

CUSTOMIZING

PARAMETERS

drive: Selects the drive the UNFORMAT command rebuilds, or to which it restores root directory files.

SWITCHES

/l: Lists information about the data the UNFORMAT command can rebuild. When used with drive, lists every file and subdirectory the command can restore. If used with the /partn switch, displays the current partition table.

/test: Displays how the command will rebuild the information on the disk without using any mirror file and then prompts you if you want it rebuilt.

/p: Prints the output of this command as well as displaying it on the screen.

/partn: Restores the partition table of a disk. Unless used with the /l switch, this switch prompts for the disk containing the partition file created with MIRROR /partn (PARTNSAV.FIL). After rebuilding the partition table, this command reboots the computer. Use this command again to restore the files and directories.

APPLICATION

Use this command to restore the files that were on a disk before you formatted it. You cannot restore the files if you formatted the disk using the /u switch or if you have filled the disk with other data. To rebuild an accidentally formatted disk, you would enter:

UNFORMAT A:

NOTE

This command requires you to type **Yes** rather than **Y** to confirm.

VER — Internal

Covered on page 34

Use VER to display the DOS version number.

SYNTAX

VER

APPLICATION

You can use this command to check the version of DOS that is installed on a computer. You can use this command by entering VER. The result shows that you are using Microsoft's DOS version 6.0.

XCOPY — External

Covered on page 133

Use XCOPY to copy files (except hidden and system files) as well as subdirectories and the files in the subdirectories. This command includes switches that select which files are copied on the basis of archive attribute, date, or user response.

SYNTAX

XCOPY pathname1 [pathname2] [/a] [/d:date] [/e] [/p] [/s] [/v] [/w]

CUSTOMIZING

PARAMETERS

pathname1: Specifies the file or files to copy.

pathname2: Specifies the destination of the files that are copied.

SWITCHES

/a: Copies files that have the archive attribute.

/d:date: Copies files with a date on or after the specified date.

/e: Copies empty subdirectories if this is combined with the /s switch. Otherwise XCOPY does not create empty subdirectories on the destination disk.

/p: Prompts for permission to copy each file. You can type a **Y** to copy the file or an **N** to skip copying the file.

/s: Copies the files in the subdirectories of the source as well as the files in the path provided. If the subdirectories do not exist, this command creates them.

/v: Checks each file after it is copied.

/w: Pauses before copying files and displays a message. You must press a key before XCOPY starts copying files.

APPLICATION

You can use this command when you want to use one command yet select which files are copied. In this case, you would enter:

XCOPY *.* A: /P

In this example, DOS would prompt for each file to find out whether you wanted that file copied.

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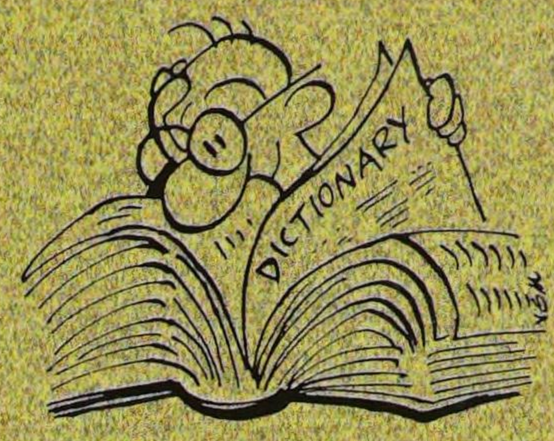

QUICK REFERENCE

1. **CD dirname**
   changes the directory to "dirname"
2. **CLS**
   clears the screen
3. **COPY filename.ext a:**
   copies "filename.ext" to the disk in drive A
4. **DEL filename.ext**
   deletes "filename.ext"
5. **DIR a:**
   lists the files on the disk in drive A
6. **DISKCOPY a: a:**
   copies the entire disk
7. **FORMAT a:**
   formats the disk in drive A
8. **MD dirname**
   creates the directory "dirname"
9. **REN filename.ext newfile.ext**
   renames "filename.ext" to "newfile.ext"
10. **TYPE filename.ext**
    displays the contents of "filename.ext"

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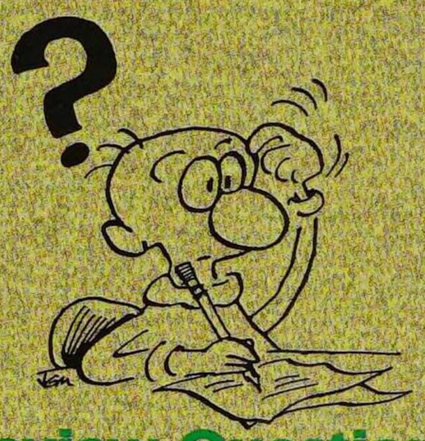
REFERENCE

Once they've gone through the text in class, students will want to keep this book as an on-the-job reference tool!

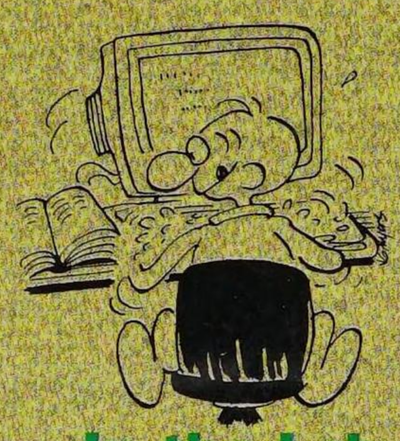
1. **Generic Keystrokes** set off in green type provide an easy, step-by-step format for using DOS commands.
2. **Command Syntax** sections give a clear breakdown of proper DOS formats and explain the most used switches.
3. **Command Reference** appendix provides a thorough description of each command, its syntax, and its applications.

END-OF-CHAPTER REINFORCEMENT



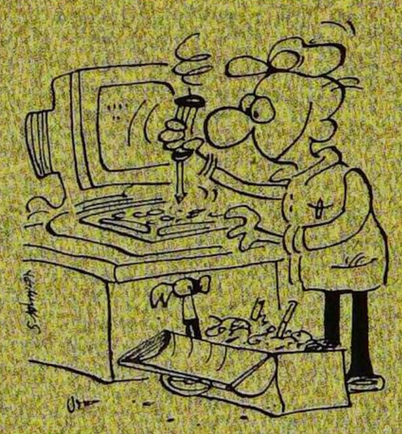
Review Questions

True/false, matching, fill-in and short answer questions test students' mastery of the basic concepts.



In the Lab

Lots of hands-on lab exercises allow students to practice what they learned on the computer.



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